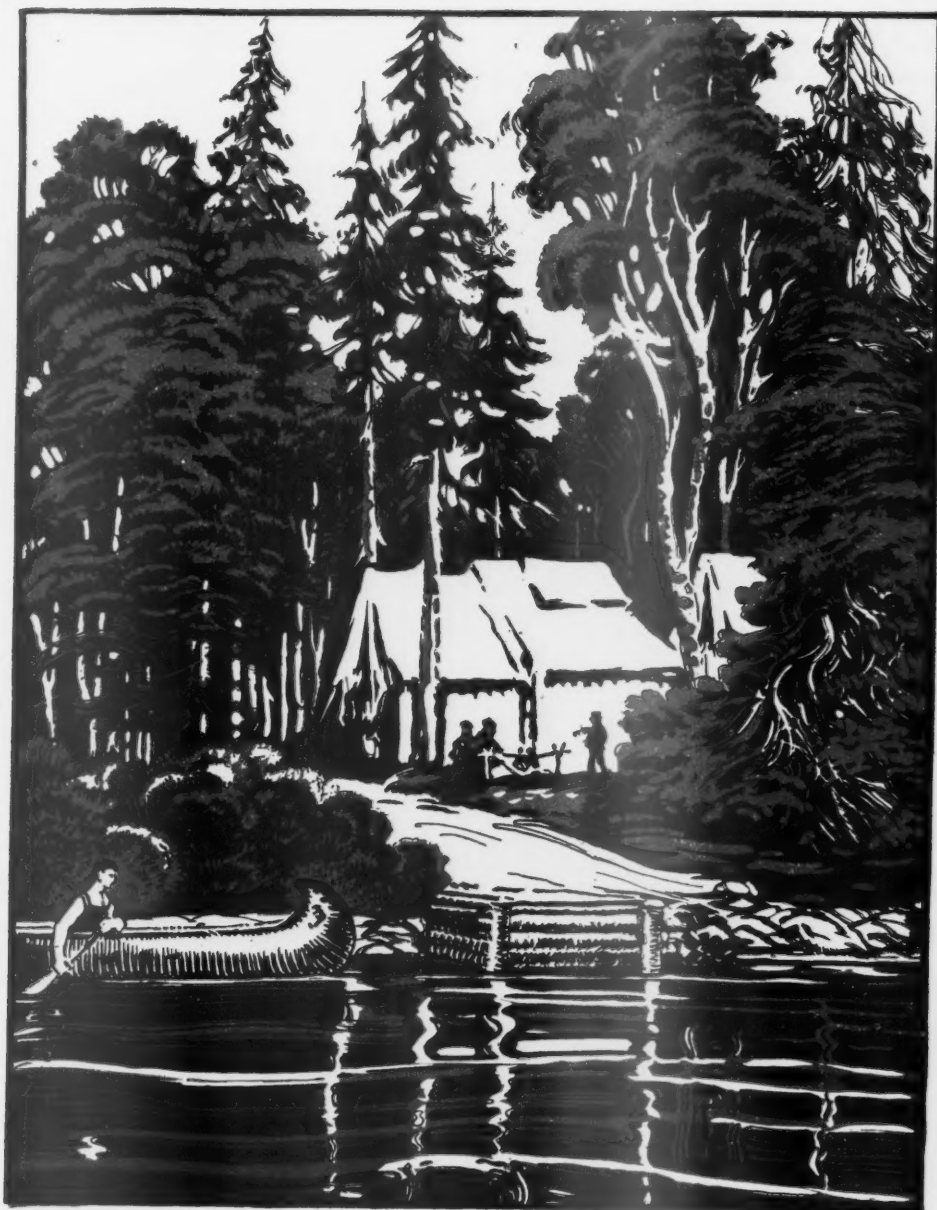


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American Forestry



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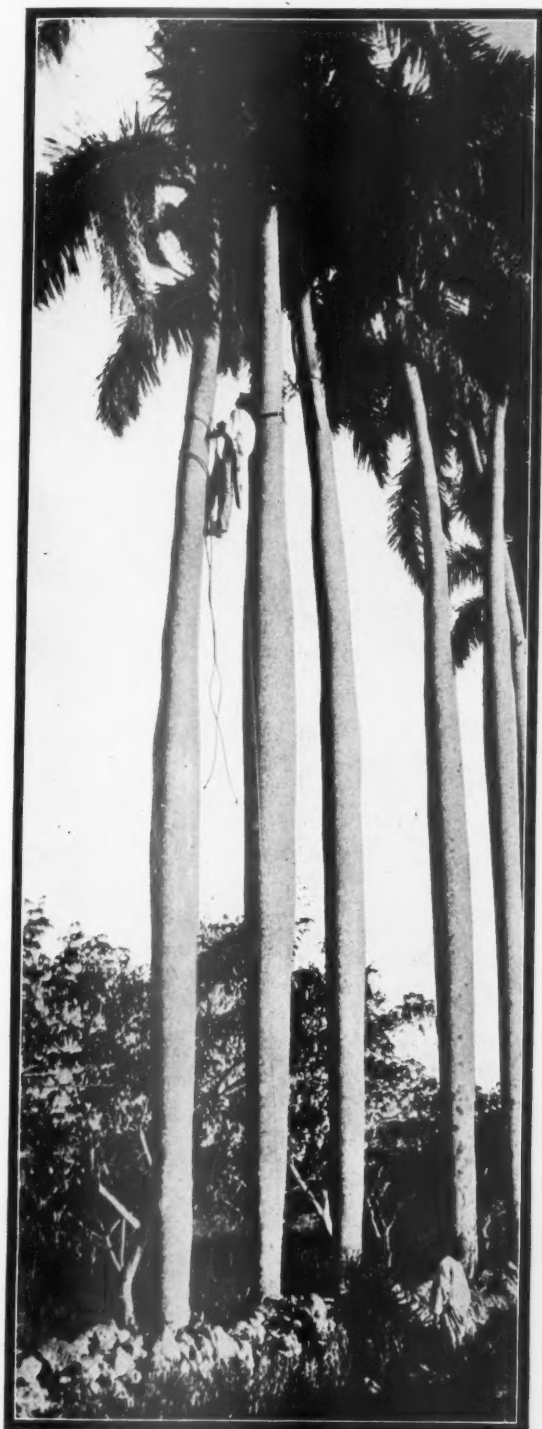
THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

PERCIVAL SHELDON RIDSDALE, Editor

MAY 1918 VOL. 24

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Western Newspaper Union.

MONARCHS OF THE ISLAND REPUBLIC

The Royal Palm trees of Cuba are protected by the Government. They may not be cut or injured for commercial purposes. These trees are over 200 feet high and the manner of scaling them is interesting. Expert climbers are employed to remove the leaves and the seeds, from which high-grade oil is manufactured.

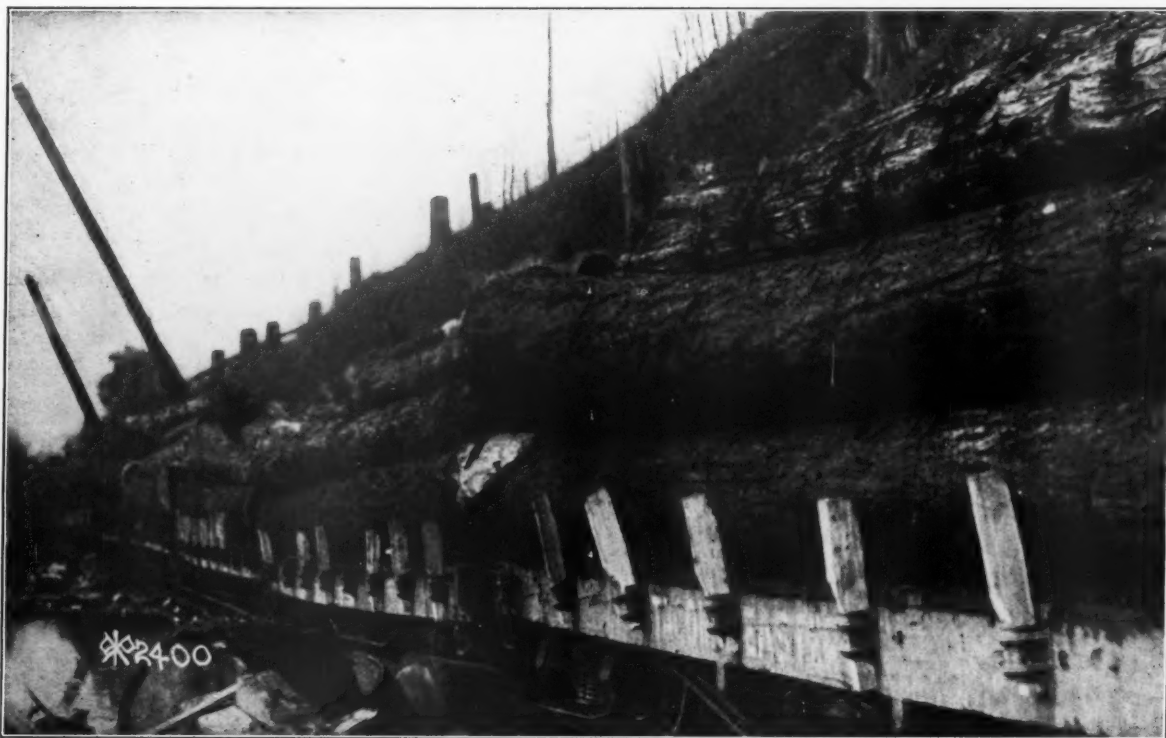
Entered as second-class mail matter December 24, 1909, at the Post-office at Washington, under the Act of March 3, 1879. Copyright, 1918, by the American Forestry Association.



Committee of Public Information

ROLLING THE LOGS

The lumberjacks of the Northwest are doing yeoman service in getting out of the forests there the vast quantity of timber which is required for the carrying through of this country's big shipbuilding program. On account of their size and their admirable fitness for the work in hand, the big Douglas firs of Washington and that section are being cut and taken out by the millions of feet.



Committee of Public Information

EN ROUTE TO THE MILL

These fine logs of Douglas fir, selected from the heart of the West Coast timberlands where big trees abound, are on their way to the factory to be shaped for use in the construction of wooden vessels. On account of its large supply of the right kind of wood for shipbuilding the West has been called on to supply a large amount of timber to the East and South for this purpose.

AMERICAN FORESTRY

VOL. XXIV

MAY, 1918

NO. 293

"MAKING THE FIR FLY"

BY JAMES A. PRESTON

STATISTICIAN, WOOD SHIP DIVISION, EMERGENCY FLEET CORPORATION

OUT in the dense forests of the Northwest, lumber-jackies are working with a zeal never before equalled to help produce the planks of fir that will be constructed by waiting shipbuilders into ships, the need of which is vital to the interests of our country, our allies and the democracy of the whole world. Thousands of miles away in the heart of the Southland brother woodsmen are felling forests of yellow pine with the same purpose behind every stroke of the ax and every swish of the saw.

Our forests stand ready then to do their share in this great war, for the side of right and humanity. The great forests that have stood long silent in their growth are now called upon to give of their best, and all of their

best to the revived industry of shipbuilding, once a leader among American industries but decadent for more than the past century. Now that this once lost art has again regained its proper sphere of supremacy, and the cry for "ships and more ships" is trite, our forests have a great and patriotic duty to perform.

Already some 45,000,000 feet have been demanded of them and they have responded well. Part of this 45,000,000 feet comes from the yellow pine forests in the South but by far the greater portion is from the fir forests of the Pacific Coast.

Up to the present time the Pacific Coast ship yards have launched twenty-six hulls, while the Atlantic and Gulf coast have launched two hulls, and one has been



Committee of Public Information

UNLOADING FIR TIMBER

The big logs are being rolled from the cars which have brought them out of the forests, preparatory for the last stage of their journey to the mill where they will be shaped for use in ship construction. About 500,000,000 feet of fir timber will be required for this purpose during the coming year, of which more than 300,000,000 feet will be available for new contracts.

launched from the Great Lake yards. The estimated launching dates of the other hulls now under contract indicate that the total output of launched hulls for the Pacific Coast yards and the Atlantic and Gulf Coast yards will be about equal in the middle of August.

We have taken upon ourselves the task of transporting supplies and munitions for England and France as well as the transporting of our Sammies to the other side, and it therefore is up to us to produce. As fast as it is possible we are calling the large vessels that we now own away from this coastwise and Pacific trade and putting them into trans-Atlantic service. We need the big and fast boats as transports and supply ships. But all such vessels called from their merchant trade must be supplanted by other ships for the trade must continue. It is not necessary that these supplementary ships be large or is it vital that they be fast, and it therefore falls upon our small wood boats to carry out this less spectacular but equally as important part in the solution of the shipping problem. However, this does not mean that the wooden ship will not be a prominent factor in our trans-Atlantic service.



Committee of Public Information

A GIANT OF THE FOREST

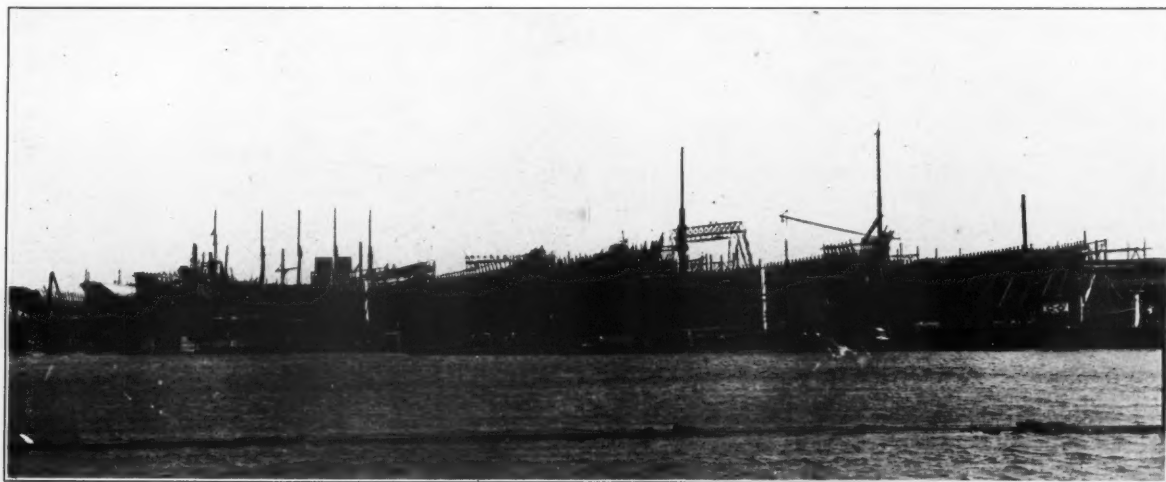
This is a sample of the great size to which Douglas fir grows in the state of Washington. These loggers of the Pacific Lumber Company Dwarf into insignificance as they chop away at the big fellow who will soon come crashing to the ground to be hauled away and made into ship timbers. Long has this fine specimen stood in the silent forests of the Northwest awaiting the day when America would need such lumber for the vast fleet of wooden vessels now being constructed to help win the war.

Forestry experts estimate that the total fir for ship timbers during the year March 1, 1918, to March 1, 1919, will amount to about 500,000,000 feet, and the total production of yellow pine ship timbers will be around 375,000,000 feet, making a total estimate of 875,000,000 feet of available ship timbers. The Shipping Board states this is the minimum figure.

Of this estimated 500,000,000 feet of fir ship timbers, 150,000,000 feet will be utilized to complete existing contracts of the West Coast yards and the Atlantic and Gulf and Great Lake yards will take some 38,000,000 feet more, leaving approximately 312,000,000 feet of fir available for new contracts during the coming year. Existing contracts will claim 103,210,202 feet of yellow pine, allowing 271,789,798 feet available for future contracts.

With existing contracts unfilled taking about 291,000,000 feet, the balance of available ship timber for new construction will amount to 584,000,000 feet, or equivalent to approximately 385 new hulls.

The operations in the fir forests of the west have been under the supervision and direction of the Fir Production Board. This Board consists of Mr. J. H. Bloedell,



Photograph by International Film Service

"SOMEWHERE IN TEXAS"

Nine vessels on the ways at a shipyard in Texas where work is being rushed on the vessels for Uncle Sam's wooden fleet. These vessels are the largest wooden steamers ever constructed. Ships like these must be turned out as rapidly as possible if the United States is going to ship its men and supplies to Europe as fast as they are needed. The forests of the United States are performing a great service in backing up the men at the front.



Committee of Public Information

LOGS AT THE MILL

As rapidly as the logs come from the forests they are run through the mills and hurried on to the yards where they are built into the framework of the big wooden vessels. This shows a busy scene at one of the mills at Tacoma, Washington, center of great shipbuilding activity, where a fine record is being made in this work.

Mr. H. B. Van Duzer, both prominent Pacific Coast lumbermen, and Col. Brice P. Disque, U. S. A. It represents the interest of the Emergency Fleet Corporation, the Army, the Navy, and the Aircraft Board, and directs the placing of orders and the logging so that a logging party will be able to use a large part of the timber in the section where they are working.

A great deal of criticism was aroused over the fact that the Signal Corps lumbermen were felling large magnificent trees to obtain the small part of wood suitable for airplane production, thus making useless for other purposes the part of the tree that was left, in most cases, over 90 per cent of the tree. In many cases the entire tree was not taken and yet spoiled for other usage.

The establishment of the Board has co-ordinated the operations to such an extent that friction and clashes of interest between the various government departments has been practically eliminated and the timber now cut can be used most advantageously.

Although the West is the lumberman's paradise the woodsmen of the South are striving hard to obtain timber of the size required for ship construction in large quantities. The yellow pine unhappily does not assume the gigantic proportions of the western firs, nor do the large trees grow in as great profusion as they do in the West. As a total of approximately 400,000 feet of the large timbers, reaching a maximum width of thirty-four inches are required per ship, the production of the ship-stock in the South was limited to a belt of timber extending about one hundred miles from the coast from North Carolina to Texas.

In order to aid in the production of these timbers it was necessary to send out a logging officer whose duty it was to spot trees of sufficient size, purchase them, and have these milled supplementary to the work of the mills already under contract. It was necessary for the mills first to comb the forests in search of the desired logs, to fell them and then to get them to the mills.

This was a hindrance because in many cases they had to go into the woods far in advance of their regular logging operations, and then by use of ox trains get the logs out. In other cases, however, it was possible to lay tracks into the heart of the forests, making the logging operations much lighter. Primitive methods of handling the timber often had to be resorted to, due to the fact that the large sized flitchers were so much larger than commercial stock that in a number of instances the mills were not equipped with the necessary machinery for treating them.

Executives of the Emergency Fleet Corporation saw that the South would have some difficulty in supplying all the large logs needed for the floor construction in the frames, and as an emergency order, placed duplicate contracts on the West coast.

This the fir forests of the northwest have had to fulfill in addition to the orders already in force for supplying ships building in the west and every effort has been made to secure a rapid production and still more rapid



Photograph by Underwood and Underwood

"COME ON IN: THE WATER'S FINE"

That is what the "Coyote"—the first wooden ship launched for the Emergency Fleet Corporation—seemed to call to her companions on the ways in New Jersey, Texas, at Tacoma, on the far-off Pacific Coast and elsewhere, as she slid into the Passaic River recently. Miss Phyllis Hughes, daughter of the late Senator Hughes, of New Jersey, christened the big wooden vessel, which is 281 feet long. It was constructed by the Foundation Company.

transportation.* A total footage of over 40,000,000 has already been shipped to the eastern yards. Meanwhile the forests of the South have been producing slowly but surely a good percentage of their quota so that at the present time we are not far behind our estimated program of production.

Most of this additional stock from the Pacific forests was sent in special trains ranging from twenty to forty cars in length. These trains were sent direct to some breaking up point in the center of the country and the timber then distributed to the yards needing it at that time. More than 1,800 cars left the coast in these trains.

A new record for speed was established when one of these trains made the trip from Washington to New York in a little less than seven days.

Some of the stock was moved by boat to Atlantic ports near the shipyards. This was done in order to relieve the freight congestion as much as possible. These boats, as well as the trains,

made every effort to lessen the time required for shipment. One steamer, the "City of Portland," sailed from Portland, Oregon, to Portland, Maine, in forty days, carrying a cargo of 2,000,000 feet of ship stock.

The vast forests of the West, luxuriant in their growth of the gigantic Douglas fir, have given bountifully of their trees. The abundance of large trees made it a comparatively easy task to supply not only the ships building in the West with the big frame items, but in addition some of the ships building in the East and South. No serious difficulty was experienced in the logging operations, due to the fact that large trees could be found within reach of the logging zone. Logs had to be produced that could turn out timber 20" x 20" x 20' and 30" x 30", but the woods of Washington and Oregon

are rich in such trees, splendid trees that have obtained their greatness through years and years of slow strong growth.



Committee of Public Information

"COME TO DINNER, MEN"

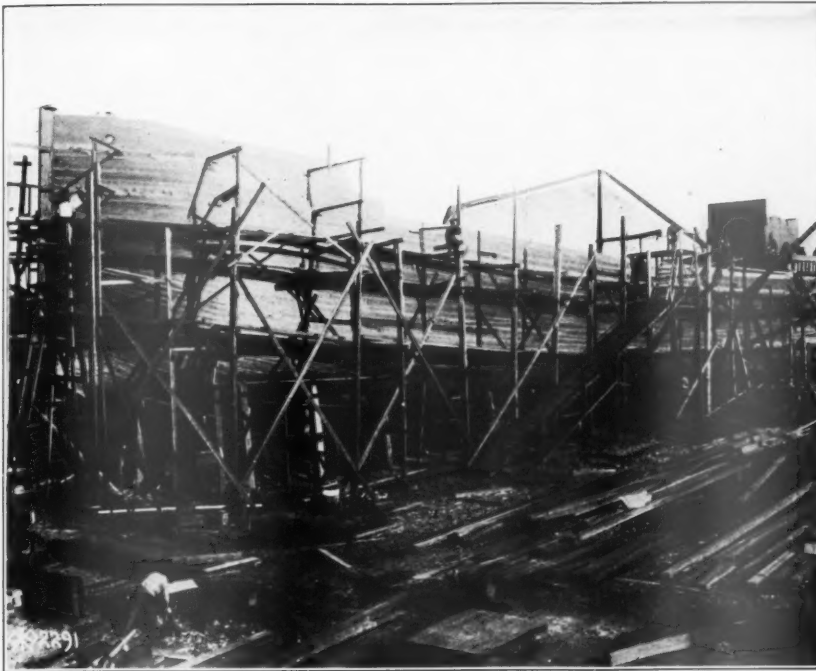
This is the welcome sound which John A. Riley, civil war veteran, is ringing out to the lumber jackies in this northwestern forest. After a hard day's work in the cutting down of big trees and dragging them out, the men are ready for the call to the "mess hall." These workers who are furnishing the timber needed for America's ship construction, are doing a patriotic work.



Committee of Public Information

GETTING OUT THE LOGS

Here we have a skidding machine at work in the Louisiana forest land near New Orleans, taking out for ship construction many of the logs which are entering into the vessels being built in that part of the country. The yellow pine forests are furnishing their share of the 45,000,000 feet which have been demanded of the forests of the United States by the Emergency Fleet Corporation. While their brother woodsmen in the Northwest are felling the big Douglas fir, the lumber jackies in the South are working equally hard to get out the needed supplies.



Committee of Public Information

SPEEDING UP THE SHIPS

This shows the way in which they are rushing the work along in Texas on the vessels which are to carry to Europe the supplies needed for the American army and this country's allies. Everything possible is being done to turn the lumber into ships as fast as men and machinery can do the work. Rapid progress is being made in the fight to beat the submarine and America's shipbuilders are proving their prowess.

With the American ship yards speeding up on production and now going ahead on full time and capacity, the demands for timber to enter into this vast and growing work of construction continue to increase. Enormous quantities of material for all parts of the wooden vessels are required; and great as the amount consumed in the past has been, the supply that will be called for during the next few months by the government to carry on its shipbuilding program, will be the heaviest ever known in the history of the country.

This increase which will be made upon the forest resources of the United States,—which fortunately will be ample to meet the emergency needs,—is due both to the fact that greater facilities have been furnished for

* The 4,700 ton wooden ship now under construction near Orange, Texas, will hereafter be the standard wooden vessel. This ship will be equipped with the same engines and boilers as the former 3,500 ton vessel. This can be accomplished, it is stated, without sacrificing more than a fraction in speed. The new type of wooden ship will not require the larger timbers specified in the original Ferris type of 3,500 ton vessel. This will, to a large degree, solve the lumber difficulties encountered in the South, and will make rapid progress in the wooden programme possible.

the construction of ships and to the decision to add 200 wooden vessels of 4,500 or 4,700 dead weight tons to those previously provided for in the Emergency Fleet Corporation's program, thus increasing to 580 the number of wooden ships completed, building or planned by the government for the fleet which is to help carry this country's men and supplies to Europe. The shipyards already established and now equipped to handle an immense construction tonnage, will be fully able to take care of the added vessels. The timber will be forthcoming as it is needed.

The "forest primeval" whose deep silences have seldom been broken since the white man came to America, is now resounding with the swing of the busy ax, the crash of falling monarchs and the healthy laugh of the happy lumberjacks. The workers who are getting out the logs and the timbers for the ship-

builders know that they, too, are soldiers and are helping their brothers in France to win the war.



Committee of Public Information

SHAPING INTO SHIPS

It will not be long before the row of frameworks seen here in the Tacoma yard of the Foundation Ship Building Company will be completed and ready to take their initial dip into the water. The great forests which are not far away make it an easy matter to furnish in a short time the big timbers which are needed for the construction of these vessels. Record time is being made in the Northwest in completing the large wooden vessels which are being added rapidly to the fast growing fleet of the United States.



THE GOOD SHIP "WAR MYSTERY"

The largest wooden steamer ever constructed, and the first of the fleet of six 5,000-ton vessels of the advanced type under way.

THE "WAR MYSTERY"

NO vessel that has been launched in recent years will be watched with keener interest by shipbuilders and seafaring people generally than will the "War Mystery," the largest wooden steamship ever built, which was sent into the water recently at a Texas port for the Cunard Steamship Company. Lloyd's Agency, the foremost marine insurance experts in the world, gave the vessel an A-1 rating, as high as could be given the most substantially built steel vessel. This rating not only is remarkable for any vessel of a new type of construction, but it is especially noteworthy when it is granted in the face of criticisms and doubts expressed concerning ships built of wood. The "War Mystery" has a capacity of 4,700 tons.

Any one who might question the ease with which ship building timbers of all except the most extraordinary sizes may be obtained from the Southern pine lumber mills would do well to visit the ship yards of the National ship Building Company where the "War Mystery" was launched on March 4. Here may be seen wooden shipbuilding material of the finest quality, stacked in orderly profusion over an area totaling several acres. As was pointed out recently by Mr. J. E. Rhodes, secretary-manager of the Southern Pine Association, the only requirement that hampers practically unlimited production of ship timbers by Southern lumbermen, is that demanding such extreme sizes that the lumber manufacturers are compelled to scour the woods in a search for trees from which they can be manufactured. The method of construction in use by the National company permits of building up frames with medium sized timbers, with no sacrifice of strength or rigidity.

WITH THE FOREST REGIMENTS IN THE FIELD

AFTER eight months in France, Henry S. Graves, Chief Forester of the United States, returned to tell us of the Forest Regiments:

"They are working to win the war. Nothing else enters their thoughts. I can't say too much for the spirit of the officers and the men. We are going to unify our every effort and do our part in the inevitable victory for freedom."

And there is ample evidence to testify to the truth of what the Chief Forester has said. American saw-mills in the pine and cork-oak forests of southwestern France are feverishly working to turn out timber for use at the front. While our troops go over the top, the forestry engineers labor at top speed to furnish one of the most important sinews of war, planks and beams for the manifold purposes of the battle line.

A letter written by Private Charles Grodeski, part of which is here quoted, gives a vivid picture of what the men of the forest regiments are doing in France.

"We remained in a temporary camp here (in France) about a month, during which time it rained almost continuously, but we kept on logging just the same, for you will remember that we were outfitted at camp there for all sorts of weather. Since moving to our permanent camp things have taken on a big hum and I dare say we could show you some wonders around here accomplished during the short time we have been in France.

"We have cut and shipped some hundreds of pine pilings, ranging from forty to sixty feet, which were used in building the docks where the majority of the American troops will land. We have one 20,000 capacity mill running night and day, and it has been running for more than a month, and it is very seldom that the mill does not overrun its stated capacity.

"In addition we have four small French mills running night and day of small capacity, probably of the size common around the Potomac. We are just about ready to start our large mill of 40,000 capacity which will run three shifts of eight hours each and I can assure you that every one's intention connected with this mill is to make it the largest producer in France. As a record is kept and posted weekly there will be no little interest taken in pushing logs through to the limit.

"We have a small railway built from the French railway, some three miles distant, up to both mills and also a railroad built back into the forest some distance which will be pushed into the interior as logging requires. In short, if what we produce here is going to put the Sammies across the Rhine and finish up this mess over here you can all prepare to read soon where they have crossed over, for we are not going to let anything interfere with pushing things to the very limit."

AMERICAN FORESTRY quotes the following excerpt from an interesting letter received from Captain Arthur C. Ringland, of the Tenth:

"The December issue of AMERICAN FORESTRY announces the organization of the Lumber and Forest Relief Committee to provide comforts for the men of the Tenth and Twentieth Engineers (Forestry). Colonel J. A. Woodruff, commanding the Tenth Engineers and those battalions of the Twentieth Engineers now in France desires to express his deep appreciation for the interest shown in the welfare of the men of his command. These

men come from the logging camps and mills of every lumber producing state, and from the personnel of the United States Forest Service. This nationalism in organization is making for the best of effort and will I am sure be reflected to the good of the lumber industry when the men return to civil life. For another thing these men will bring back deep impressions of the thrift of the French people and their conservation of national resources. For example, one battalion is now engaged in the logging of a planted fir forest that runs as high as fifty thousand board feet per acre!"

From Lieut. C. W. Smith, Chaplain of the Twentieth, this letter has been received by the Treasurer of the Fund being raised for the welfare of lumbermen and foresters in military service:

"My dear Mr. Ridsdale:

"No doubt you received in due time my receipt for the money given for use of the Twentieth and Tenth Engineers. I would like to write you a word of thanks. What assistance this money will be to me—no one can know as well as I. I greatly appreciate this fund, and on behalf of the Regiment send to you and the splendid body of men you represent our hearty thanks.

"The money has been deposited in the 'Farmers Loan and Trust Company,' Paris, France, to the credit of 'Welfare Fund Twentieth Engineers, United States Army,' C. Walter Smith, Treasurer. . . .

"Very soon the many needs of the Companies will drain heavily upon the fund. I will send you report and vouchers, about once in two months, or more often if possible. Any further money you may receive for this fund could be sent direct to Paris to the credit of the fund, as stated above, and notice sent to me. I do hope there will be a considerably larger fund on hand before next winter sets in. . . .

"Wish I could write you a long letter recounting our experiences thus far, but too many matters press me now. As soon as we get caught up a bit I will write you a real newsy letter. Believe me, the men are splendid and deserving of all the foresters and lumbermen can do for them."

The many friends of C. W. H. Douglass, of Syracuse, will be glad to know that he has been commissioned as a first lieutenant in the Signal Corps, Aviation Section. Mr. Douglass, until recently, Assistant Secretary of

THE TENTH ENGINEERS.

By Bugler W. P. Winslade, Co. C, 10th Engineers (Forest)

You can talk about your regulars
Your infantry and such,
And how they're going to do such wondrous things;
But when it comes to doing things
You've never done before,
You can hand it to the Tenth Engineers.

We came in from the highways,
From the forests and the hills,
From the valleys and most everywhere I guess;
And we started throwing guns around
At military drill,
In a way we'd never handled guns before.

Then we came across the water,
Landed here in *Sunny France*,
We landed in the mud and rain and slush;
And after, when the winter came
We labored in the snow,
And all expressed their thoughts of *Sunny France*.

To add to all our comforts,
We had naught but bully beef,
With hard-tack pudding as a special treat,
We slept in mud, we ate the mud,
And we drank the mud besides,
That is, when we couldn't get *vin blanc* and such.

We built a fine big saw-mill,
Right here among the pines,
And it made the natives stand around and stare.
It was everything American,
With 'lectric lights and all,
And it sure looked good to every fellow here.

Now we're cutting up the timber,
And we're handing out the goods,
And we feel as if we're doing our own share;
And if by leaving all behind,
We help to win this war,
We won't be sorry that we ever came.

the American Forestry Association arrived in England early in October, where he received advanced training in flying and aerial fighting with the Royal Air Force. Writing recently from Scotland to AMERICAN FORESTRY, Mr. Douglass said:

"The other day I saw a picture of the English machine, which has been doing demonstration flying over Washington. Only the cockpit of the machine showed but that was enough to identify it as an English training machine. That was the second 'bus' I ever flew and in it I learned to loop, spin, half-roll, side-slip, roll, Immelmann, etc. It's a very nice machine to handle. We're flying scouts now—smaller and much faster machines. They make over 100 miles per hour level and dive at over 200, and are very fast in stunting. In fact, the 'bus' I'm going overseas on is the fastest stunting 'bus' in use today, and has the record for Hun machines downed the last few months.

"For a long time flying did not appeal to me as a pastime—even after doing a lot—but now with some half a hundred air hours to my credit, I can't see a machine up without wanting to be up myself. Nothing is quite so much fun as flying low along the shore, or chasing a railroad train, or scrapping with another machine. Flying low one gets all the sensations of speed that you get in a car, except that the speed is faster and air bumps are not nearly so hard as those on the road. . . . Have been doing so much traveling around that settling down will be hard. A few trips of 100 miles or so by aeroplane, done in solid comfort in one and a half hours, or less, with an unobstructed view of the earth, makes even a short railway journey very irksome by contrast. The blue sky—and if you are above the clouds in a world apart, the carpet of bumpy, uneven vapor with white crests and deep shadows in the valleys is very new and beautiful. And to get up on a clear day to six or eight thousand feet and see the earth stretched out like a mosaic is even more entrancing. You can see silver ribbons, the rivers, winding down for many miles gradually growing by additions from others until they reach the sea. Flanking them are the brown and green fields, or gray-black patches of woodland all separated into apple pie order rectangles. The towns, with their red-tile roofs and myriads of chimney pots, make a pretty contrast in the bright sunlight with the browns and greens of nature."

Writing of the special work for the welfare of the Forest Regiments, in which the American Forestry Association has been so active, Mr. Douglass says:

"That's 'great stuff' you folks are doing for the Forest Engineers. Those boys will certainly be pleased with the real material aid, and I'm in something of a position to know, being over here. The knitted things come in mighty handy, the canteens in camp are a priceless boon, and especially does the grafonola fill the musical need. We fairly starve for music and when a pianist appears he is pampered and fed and jealously guarded and worked to death at the piano. The special aid fund is fine, too. The whole thing is a splendid, patriotic service."

From Chaplain H. Y. Williams, of the Tenth, we have the following:

"Dear Mr. Ridsdale:

"On behalf of our regiment may I thank you and through you all those who have co-operated through the Welfare Fund for Lumbermen and Foresters in sending us the splendid check for our well-being, and the grafanolas. You can know that this goodness will mean even more than you can realize to the men. The efforts that you have put forth in the sweaters and in these new gifts are heartily appreciated and for it all we thank you from the bottom of our hearts. There are ten battalions of Foresters in the Twentieth and two in the Tenth Regiment. Chaplain Smith therefore turned over to me for our work one-sixth of the 4,000 dollars or 3,790.80 francs. If you wished a division on any other basis it can be changed at your request. The money I have deposited with the Farmer's Loan and Trust Company, Paris, where I shall draw check on it as needed. It is in the name of 'Tenth Engineers' Welfare Fund, H. Y. Williams, Treasurer.' Every few months I shall send you a statement of the fund, with account of purchases. The grafanolas have not arrived as yet but will be here shortly. We have a few but the new ones will fill in big gaps. I should appreciate it if your committee

could keep us supplied with needles for the same as they are difficult to secure in France and can only be purchased in very small quantities.

"Am attaching herewith a copy of my weekly record of 'doings,' some of which you may find interesting. With hearty appreciation of your good work for us, I am with deep gratitude," etc.

The "record" is printed in full:

Regimental Headquarters,
Tenth Engineers, A. E. F.,
April 10, 1918.

"This has been one 'tres vite' week and yours truly quite on the jump. Monday, a week ago, I went for my weekly visit to a small camp of men in charge of our loading and shipping to the front. They are some twelve miles from our big camps and located in a small railroad town, where the British have a similar detail of men. Just one visit a week means that I try to make it a specially worth while night. Early in the evening we held a lottery. Several boxes had come in with tobacco, books, socks, etc. Every man had a number and the lucky fellows get the lucky numbers which mean presents. It is great fun. Then we had our church service in the mess hall and you ought to hear those men sing. We have no piano, and I am not a real leader, but it seems to make no difference. I spoke on 'The Difference Faith in Immortality Makes in This Life,' and afterwards called for hymns. Perhaps you think that soldiers do not think much of heaven but you would have been surprised as I was, to have them ask for 'When the roll is called up yonder,' 'Saved by Grace,' and others on the future life. Then the men listened to a victrola concert, many of the records having

just come from friends in the States. Every single man in that camp attended the service voluntarily and some invited Britishers of whom we had several. I rather imagine that some ministers at home would think that the Kingdom had arrived with a record like that. While I am writing of the evening and thinking of others like it, just let me add that any of you who would like to send things to soldiers will find them most appreciative of magazines, books, victrola records, socks, cakes, candies, games and tobacco. Personally I would not emphasize the latter, for men can buy it here, and when given out in quantity free it leads men to take up the habit who have never



LIEUT. C. W. H. DOUGLASS

A graduate of the New York State College of Forestry, late Assistant Editor of this magazine, and recently commissioned in the Aviation Section of the Signal Corps.

used it before. For any of the above in large or small doses I can find a most appreciative recipient.

"Tuesday night I was in another camp and so it would have been through the week, but on my return home I found a telegram awaiting me calling me to regimental headquarters for a conference with the new chaplain of a similar regiment of engineers. He had been entrusted with a check of 3,970 francs (\$665) as our regiment's share of a welfare fund for forestry engineers in war service. Surely you folks at home are backing us up to the limit and such generosity will mean much to our men in making their hard work here more enjoyable, and thereby adding to their contentment. They are a splendid group and from their hearts appreciative of such kindness. From headquarters we went up to Paris for consultation with the Y. M. C. A. on work among our camps. It was my first actual experience of being under fire for the great gun was bombarding the city. The big shells are doing very little damage and cause scarcely any anxiety on the part of the Parisians. As for myself I did not recognize the fact that there was any added noise although a shell fell during lunch time on a street two blocks away. The city is filled now with refugees from the Amiens district and some wounded from the great offensive, while regiments are moving through to the front. I certainly wished that our regiment was going with them, as do most of our fellows. However, for the present we push the service of supplies and food for days to come. Everyone is confident that the Allies are going to rush the Huns back, and then we shall see the beginning of the end.

"Sunday I attended two church services; one, the American Church and in the evening the British Embassy Church. It was my first Sunday off for seven months and how good it seemed to enter a real church and hear someone else speak, and yet I think we have worshipped quite as acceptably on a ship's deck, in the open air under the great blue sky, in barns, tents, half-finished barracks, and recreation halls. But the church and its atmosphere brought back memories of the Homeland that made the day very precious. In the afternoon I went for a walk with a Red Cross officer, passing the Arc of Triumph and out the Boulevard de Boulogne to the Wood of the same name. Amid the passing throngs it hardly seemed possible that just fifty

miles away the greatest battle of history was then being enacted. The lake, the budding trees, the well-dressed pedestrians made a beautiful sight, but it was all sombered by the heavy black mourning which never leaves our sight in the land that has fought so nobly for freedom and given so largely of its life. . . .

"The leaders of our army have shown great wisdom in keeping our men out of the great cities, especially Paris, on their leaves and thus away from the terrific temptations there and the resulting consequences. The army has done everything possible to make attractive certain leave places where conditions are guarded and the men come back after a week's rest just crazy over the good times that they have had. The Y. M. C. A. arranges tramps, tours, stag-dances, movies, shows and best of all has a large number of real American girls present and their company means more than I can express and more than you will know unless you have been away from their good fellowship and inspiration for many months.

"By Monday night I had finished my work and left Paris. My seat had been reserved previously and strange to say I was the one man present in a compartment with five English nurses going back after leave to Italy. Well say, if it didn't seem like home. We chatted and laughed until late. I was proud of them and their unselfish spirit and bade them good-night with real regret. An American Major looked in our party and openly expressed his jealousy of the young Lieutenant. Surely he might well have for if I needed a tonic they certainly served that purpose. Arrived back at camp the next day and next week start out on my second tour of my parish which covers most of France. My opportunity is enormous and the responsibility is great. The latter sometimes staggers me but when I see the appreciation and responsiveness of the men and when I stop to remember that it is 'not by might nor by strength, but by His Spirit' that my work is to be done I go on rejoicing.

"May He who cares for each one of us help us individually to find our place in this the world's crisis and especially bless those who just now are fighting for Him and Democracy on the plains of Picardy. My best wishes. Faithfully yours,

"HOWARD Y. WILLIAMS, Chaplain."



LIEUT. HOWARD Y. WILLIAMS

Chaplain of the Tenth Engineers (Forest) and doing yeoman work for God and country in France.

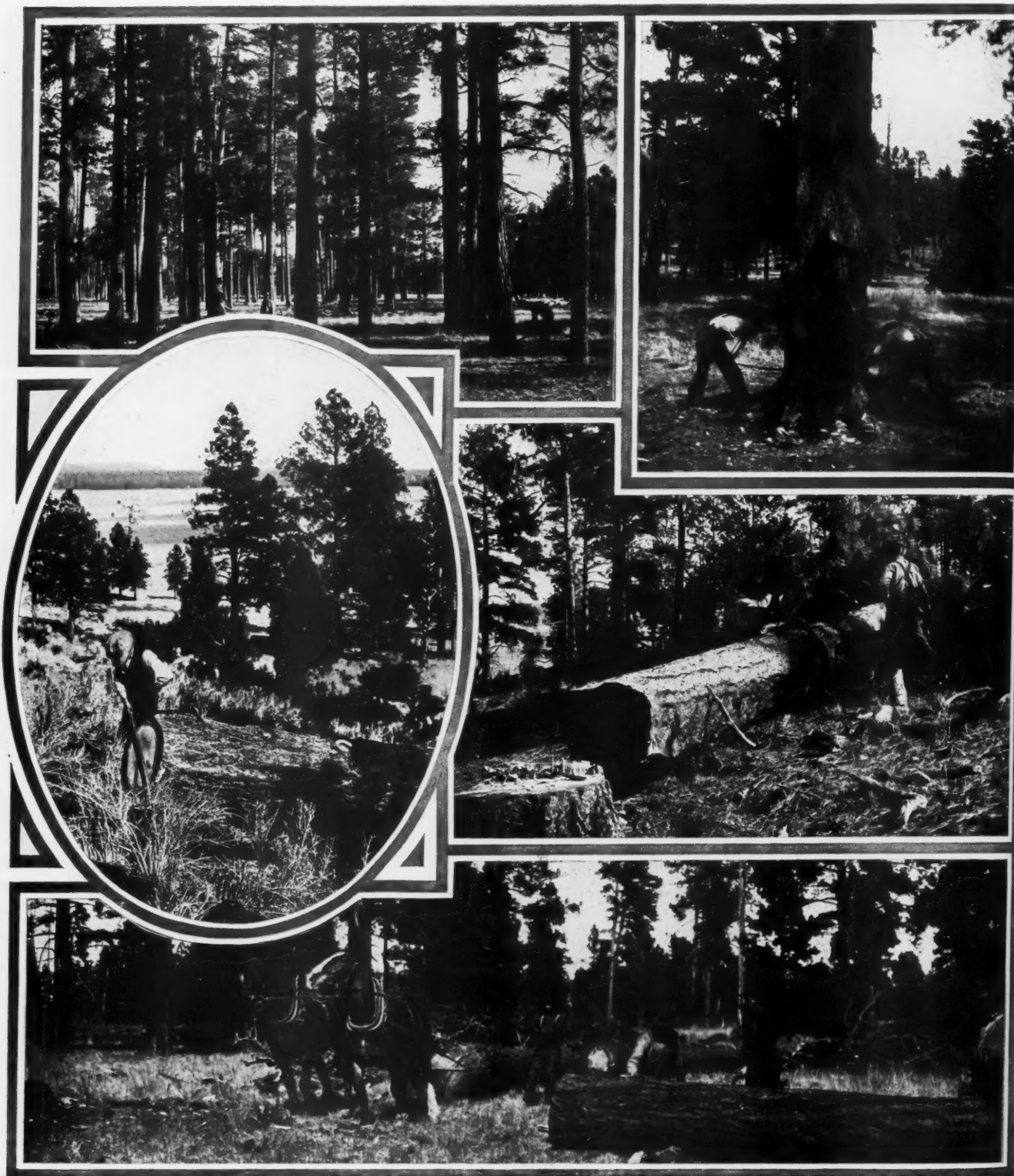


Underwood and Underwood

JUST ONE OF THE MANIFOLD USES FOR WOOD IN THE WAR

These are wooden trench mats on which the soldiers stand in the trenches and which are used for making paths over muddy ground. As may well be imagined, they are very popular articles during the rainy season in France. They are here being removed from railway trucks.

crisis and especially bless those who just now are fighting for Him and Democracy on the plains of Picardy. My best wishes. Faithfully yours,



FROM FOREST TO MILL

A STORY IN TEN PICTURES, ARRANGED BY CAPT. JOHN D. GUTHRIE, OF THE 10TH ENGINEERS (FOREST), NOW OVERSEAS, FORMERLY FOREST SUPERVISOR AT FLAGSTAFF, ARIZONA, SHOWING A FOREST SERVICE TIMBER SALE OF WESTERN YELLOW PINE ON THE COCONINO NATIONAL FOREST, FROM THE TIME THE TREES ARE SELECTED AND MARKED IN THE FOREST FOR CUTTING UNTIL THEY ENTER THE SAWMILL FOR CONVERSION INTO LUMBER, AND ALSO HOW THE FOREST LOOKS AFTER THE MATURE TREES ARE CUT AND REMOVED. THE FIRST PICTURE SHOWS MARKING FOR CUTTING OF MATURE TREES, LEAVING SUFFICIENT SEED TREES TO SECURE A SECOND CROP.



A PICTURE STORY

THEN FELLING AND SAWING THE TREE INTO LOGS WITH A TWO-MAN HAND SAW, NEXT SCALING A LOG AND SKIDDING OR BUNCHING THE LOGS FOR THE BIG "WHEELS." THEN IS SHOWN A LOG-LANDING AND TRAIN, AND THE BIG FELLOW GOING ON THE CAR CONTAINS 1,600 BOARD FEET. IN THE NEXT PICTURE THE LOG IS STARTING UP THE SLIP FROM THE POND INTO THE SAWMILL. IT IS PULLED BY A HEAVY ENDLESS CHAIN WITH PROJECTING HOOKS. AND NOW WE SEE THE FOREST AFTER PROPER LOGGING. ALL DEAD TREES HAVE BEEN FELLED AND THE BRUSH PILED FOR BURNING IN ORDER TO REDUCE THE DANGER FROM FIRE.

THE DEVELOPMENT OF LOGGING OPERATIONS

BY HU MAXWELL

CUTTING sawlogs and conveying them to mills to be converted into lumber has been a business since soon after the Pilgrim Fathers moored their bark on the New England coast. America was more than a century ahead of England in sawmill building, for in the old country labor associations, guilds, and the laborers individually, were hostile to mills that made lumber because it was feared that they would deprive pit sawyers (hand sawyers) of their means of livelihood, and that was why in England they went ahead sawing lumber by hand a full century after the Americans resorted to the

our early years this saw was not as important, relatively, in felling trees and bucking logs as it is now. Most of the work was done with axes; yet saws were used to some extent for that work. It was not unusual, within the memory of men still living, for trees to be converted into sawlogs with axes, the chopper squaring both ends of the log and in the process wasting about a foot of each log's length. The axman stood on the log and chopped the trunk off. He made both sides of the notch square as he proceeded, thus really cutting the trunk off twice for each log, which was not only a waste of time but a waste of wood. It was necessary to have the ends of the log square in order to place it on the old water mill's carriage. The modern mill



A TEMPORARY LOGGING RAILROAD

The kinked rail, the job lot of ties, and the sharp curves indicate that this tapline road is meant to be only temporary; yet such roads are sometimes improved and become permanent transportation lines. This is a region of mixed hardwoods and softwoods of excellent grades, to which the piles of logs on the right of way bear evidence. And now we see a logging road temporarily out of commission, and it may continue so for weeks until the Mississippi's overflow subsides.



AND THE FLOODS DESCENDED



DAM CONSTRUCTION WORK

In this region lumbermen expect such interruptions to their work and lay their plans accordingly. In this last picture we see a splash dam, which will impound the water flowing in the channel and loose it at intervals to carry logs on their way.

use of water power mills or, in rare cases, of mills driven by the wind.

But whether the sawing was done by pit sawyers or by power mills, the first step in converting a tree into lumber was to crosscut it into logs and convey the logs to the place where the lumber was to be made. The logging business has gone steadily on in America during two or three centuries, with constant development of methods to keep pace with the growth of other industries. The beginnings were on a small scale everywhere, but large enough to meet the demand for lumber. Two men with a span of horses or a yoke of oxen could cut and haul enough logs to supply the little mill on the frontier where the customers were all found within a radius of four or five miles. It has been a far cry from that day to this, though the growth was gradual and each improvement served as a stepping stone to something still better.

The crosscut saw is as old as Egypt's civilization, but the Americans took the prototype and developed it. In

can handle a log with unsquared ends.

The employment of a saw in crosscutting was the first important conservation step in logging; for it saved from three to six feet of a tree's length. In view of this, it is surprising that saws were so slow in taking the place of axes in felling trees and bucking logs; but it is well known that the idea of economy in manufacturing and using wood was seldom present in the years when forests were supposed to be exhaustless. The possibility of saving four or five feet of the trunk of each tree as it was cut into sawlogs made a weak appeal to most timber owners until very recent times. The log cutter, like the proverbial workman, "was known by his chips," and ten bushels of chips, where two gallons of sawdust would have sufficed, proved, in his opinion, that he was a good workman.

A letter written from Philadelphia by Thomas Paschett in 1683 contains a quaint, short account of logging with



A WELL FILLED MICHIGAN LOG POND

Hardwoods and softwoods from the northern forests mingle in this reservoir at Wells, Michigan. The mill belonged to the late Senator Stephen, and it is one of the largest in the country cutting hardwood lumber. It is claimed that every species of wood growing in the Upper Peninsula of Michigan passes through this mill in larger or smaller quantities, more than forty species in all.

axes, as contrasted with crosscut saws in that day, and in Mr. Paschett's opinion, the ax won out. He was speaking of Swedish lumbermen in New Jersey: "They will cut down a tree and cut him off when down, sooner than two men can saw him, and rend him into planks, or what they please, only with ax and wooden wedges."

Very much later than that day, and not so very long ago, the cost of an ax was a dollar and of a crosscut saw eight or ten dollars. The farmer who cut a few logs, or the owner of a small mill who did not need many, made the difference in the cost of an ax and of a crosscut saw an excuse for using the former and thereby wasting from five to ten per cent of every trunk bucked into logs. That day is past now and the ax has been largely displaced by the saw, not only in cross-cutting but also in felling trees, and it saves both time and wood. Along with the saving, the modern foot-high stump should be compared with former stumps which were from three to six feet high, to say nothing of Pacific Coast stumps ten feet high.

The old-time politician was known as a "stump speaker," because he liked to stand on the high stumps of that day when he made his harangues to his constituents. The stump one or two

yards high gave him a commanding position above his audience. Had stumps been cut as low in those years as they are today by progressive lumbermen, the term "stump speaker" would never have found a place in our vernacular, and though the language would have been one word poorer, the country would have been many million dollars richer by the wood saved in stumps.

The transportation of sawlogs from forest to mill has furnished many a knotty problem for the operator. The earliest problems were not always the simplest, though that was generally the case. When the trees grew within a stone's throw of the mill which was to saw them, as often happened in pioneer days, a span of horses or a yoke of brawny oxen usually supplied all necessary motive power; and the equipment consisted of a sled, a cart, a wagon, or perhaps simply a chain to serve as a choker in snaking the logs. The grabhook, which has done such yeoman service in yanking logs out of tight places, was a long time in reaching full development and use. It was so also with the canthook for rolling logs. That tool was known to the few a long time before it was used by the many. In the times before the canthook and the grabhook were invented, the common saying was true that "logging must be done by main strength and awkwardness." The person who originated that saying builded greater than he knew. As the business increased to a larger scale, methods improved and new contrivances appeared. Some of the earliest mills in Michigan, recent though that period was, were supplied with logs at first by rolling them with handspikes and canthooks from the place where the trees fell to the site of the mill. Such experiences, however, were exceptions everywhere, but something as crude was in use in California after a beginning was made in logging



A LIDGERWOOD SKIDDER AT WORK

The above picture represents a woods operation among the Allegheny mountains, near Lanesville, West Virginia. An inch and a quarter cable carries the logs 2,000 feet across a deep valley to the logging road. Such territory could not be worked by any of the old-time methods of hauling with oxen. The ground is too rough.

redwood. Gangs of Chinamen with specially designed canthooks—which the California lumberman of that day persisted in calling “pinchbars”—shunted the logs along by hand power and elbow grease, with much grunting and many a Chinese yo-heave-ho, from the forest to the mill. But California even went ahead of the Chinese “pinchbar” method of log moving, but it was earlier. The timber used in building San Diego Mission, about 1774, was carried from the Cuyamaca mountains, a distance of sixty miles or more, on the shoulders of Indians, enough of the natives joining in the work to lift and sustain the loads. The deeply-worn path made by the feet of the native log carriers, up hill and down dale, may be seen in places to this day. They carried nearly as much timber and carried it nearly as far as Solomon’s hundred thousand lumbermen who spent seven years bringing timber for the Temple at Jerusalem—according to the accepted account of Solomon’s lumber operations. The San Diego Mission was as large as Solomon’s Temple.

Logs are heavy, and it costs money to move them when the motive power must be paid for. A consideration of that fact was always an incentive to the logger to make gravitation do the work when possible. Logs which are cut on the slopes and summits of hills and mountains may be made to roll, slide, slip, or tumble to the bottom, and that has always been a favorite method, provided it was desirable that the logs should go to the bottom. Logs stripped of their bark will slide down hill in summer nearly as readily as they will slip down the frozen slope in winter; and that always has been and still is a favorite method of moving logs from higher to lower levels, where the ground is steep enough and is not too rough. Chutes are employed as log slides where the ground is rugged or the slope is of only moderate steepness.

Rolling logs down hill by the force of gravity is more difficult than sliding unless the ground is clear, because

every obstacle deflects the log from its course. In some regions the process of moving logs down steep slopes by rolling them is called “ballhooting,” which word is not yet in good standing in the dictionary, though it is well understood in some mountainous regions. The

logs are never moved far by the ballhooting process.

Where water of sufficient depth is available, it supplies the cheapest means of moving logs long distances. All commercial timbers of the United States, if moderately dry, will float on water, but some of them will sink if green. Attempts to float heavy timber has more than once resulted in the loss of the logs, which, when they strike the water, “go down like Lucifer, never to rise again.”

Logs of every species, regardless of size, will sink if thoroughly water soaked; but most logs remain afloat long enough for all ordinary river journeys. However, the loss of logs by soaking and sinking has been serious on some of the rivers and lakes where large movements of logs by rafts or drives have been made. Some logs in that category, which sank a generation or more before, have been recovered and sawed into lumber with-

out much deterioration on account of decay. In New Jersey, cedar trunks and in Russia oak logs in sound condition have been pulled from the water after lying submerged for hundreds or thousands of years. So long as they remain wholly submerged they are little affected by dote or rot.

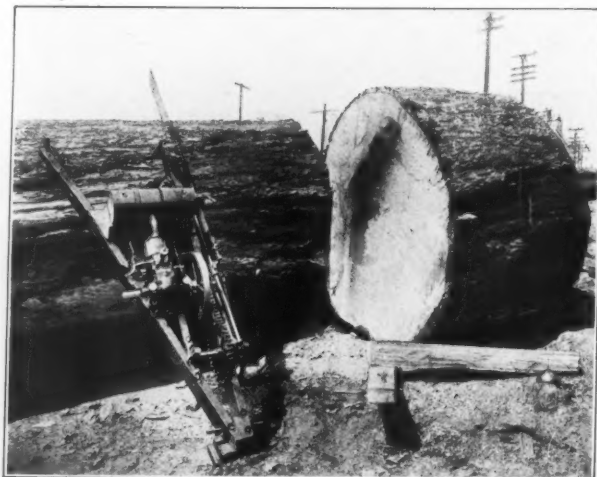
Many of the rivers of the United States have played an important part in the country’s lumber business, their particular service consisting in carrying logs from forests to mills, often long distances. In point of time, the rivers of New England came into service first, and their currents conveyed vast quantities of

white pine to mills lower down the streams. That traffic continued more than 250 years and has not yet wholly ceased. As the centers of the lumber business moved westward, from New England to New York and Pennsylvania, and later to Michigan, Wisconsin, and Min-



A WILDERNESS LOGGING CAMP

This is a typical winter scene in an old Adirondack logging camp in New York. The cabins have evidently been there a long time. Very similar camps are to be found in Michigan, Wisconsin and Minnesota. More attention is now given to sanitation of lumber camps than formerly.



POWER CROSSCUT SAW AT WORK

The gasoline-driven saw is an improvement on that driven by man power. Mechanical power is particularly important now in view of the scarcity of labor and the demand for men. This saw with its equipment is portable and can be carried about in the woods and set to work bucking logs. The photograph represents an operation of the Chickasaw Cooperaage Company in Tennessee.

nesota, the rivers of those regions were turned to account in carrying pine and hemlock logs. Rivers further south were highways also for the transportation of logs, but not quite to the extent of those north and east. The Ohio river throughout its whole length from Pittsburgh to its mouth, was long a famous logging stream. Its forest burdens were chiefly in the form of rafts, rather than of single logs that floated free without human guidance. Log rafts have not yet wholly disappeared from the Ohio, or even from the Mississippi.

Both loose logs and log rafts have been carried by the same streams in most cases, where depth of water has been sufficient; but many small rivers, and many of larger size but with rough channels, have transported loose logs but few rafts. The rafts are steered by men, but logs which float free are carried wherever the currents drive them, and they are liable to lodge against rocks and banks, or remain stranded when the floods which follow rains have subsided. It was and is the log driver's business to follow the drivable rivers and free the logs that have lodged and send them upon their way. In many regions log driving was a trade, and men worked at that who did little else. They endured all sorts of wind and weather, and faced many dangers. Not infrequently the drivers lost their lives in whirlpools, log jams, and ice gorges.

It is necessary to speak of log driving largely in the past tense for in recent years the tapline railroad has captured much of the logging work from the rivers; yet in some localities the streams still do their full share in transporting logs from forests to distant mills.

The "drivable" or "floatable" rivers and creeks, so called because they are large enough to carry single logs in times of freshet, have played their part in state and national politics and in "porkbarrel" history. Congressmen have been many times accused of playing politics by securing liberal ap-

propriations for streams of that class, when the actual merits of the cases did not call for appropriations. It was sometimes said ironically that with a good appropriation back of it, a log would float down a stream "so long as the ground was the least bit damp." Though that was

intended as sarcasm, there was some truth in it; for, with the aid of splash dams, quite small streams could be made to carry logs. Splash dams, or drive dams as they may be called, impound the small quantity of water flowing in the channel, and at intervals let it loose as artificial floods which carry the logs further upon their journey. By such means many insignificant streams have been made to do splendid service in the transportation of logs, and regions have been logged which otherwise would have remained in-

accessible without building railroads, and often the cost of such roads place them out of the question.

The rivers west of the Rocky Mountains have not had as important a part in logging operations as the rivers of the east, yet some log floating and log rafting have

been done on western streams. Many of those rivers are not very suitable for log carrying purposes, and there has been another handicap laid on those rivers, in the fact that much of the western timber is of such large size that a pretty deep stream is required to float the logs. But a more potent reason for the smallness of the use made of western rivers as log carriers has been the fact that railroads were in use before much logging was undertaken in that region, and operators preferred to build railroads to bring their logs out of the forest. That was not the situation during the early period of eastern lumbering. Railroads were then unknown.

Log rafts have been of many sizes and of nearly all shapes, from three or four logs tied together with grape vines, hickory withes, or birch hoop poles, to enormous structures carefully built and held in form with chains. Small streams can carry only small rafts, and sizes of



WHERE LOGS ARE MEASURED BY THE ACRE

On large rivers like the Mississippi and some of its tributaries enormous rafts of logs are not unusual. Water transportation is cheap and it has been made use of on most rivers of medium or large size in the wooded parts of the United States. The movement of such rafts is always with the current, and the steering is done with oars at each end.



A TWO-WHEELED LOG CART LOADED

A common name for a vehicle of this kind is "high wheels." There are several makes and they are widely used, and they do well on rocky ground and can pass over low stumps and small logs. The horses are hitched to the end of the pole, and the pull lifts the logs from the ground and holds them suspended during the haul.

rafts have been regulated, to a considerable extent, by the depth of the water that was to float them. No raft moves against the current, unless temporarily under the force of a strong wind, or unless it is towed by a boat. But rafts are towed in still water, and even upon the ocean itself. The largest rafts ever built have been for ocean navigation. Old raftsmen used to say: "On

small rivers the size of a raft is measured by the number of the logs it contains, but on the Ohio rafts are measured by the acre."

Logs sent singly down floatable streams must not only reach their destination, but they must stop there. Booms are built to stop them. These contrivances are made of logs chained end to end and stretched across the river, supported at intervals by wing-walls and piers. The logs which float down the stream lodge against the boom. If the current is strong and the number of logs great, they pile high against the obstruction, standing on end and at all angles, and filling the channel of the river from



A CLYDE LOG LOADER AT WORK

Rolling logs is now out of date and is the last resort of the unfortunate operator. The steam loader lifts the logs and swings them on the cars in less time than it would take an old time canthook man to pick the place to grab "holt." This scene is in Arkansas.

transport their logs on railroads. This practice has grown up gradually. The number of logs to be carried must be large before the expense of building a railroad is justified, but when the operation is of sufficient size, the movement by rail is economical. Many large mills

bank to bank. Too often the booms prove unequal to the terrible strain and give way, freeing the logs which may float beyond recovery, causing a loss that embarrasses or bankrupts the owner. Readers of "The Blazed Trail," by Stewart Edward White have a graphic account of the breaking of a boom and of what it means to the owner.

Most large lumber operations now

could not possibly be supplied in any other way.

The beginning of logging by rail was over wooden tramroads, and a horse or a mule furnished the motive power. That would be looked upon as slow now, but it was a notable improvement upon the custom of dragging the logs along the ground with chains and hooks, or upon sleds or carts. The wooden



NEXT BEST THING TO A STEAM LOADER

Wisconsin loggers are here seen putting the finishing touches on a fairly generous sledload of hemlock logs. The sticks are rolled up the steep skids by horsepower. This is counted as very dangerous work and green hands are not permitted to do it. The snap of a chain may be fatal.

tramroad had its limitations, and an extreme length of two or three miles was one of the limits; and the tendency of the car wheels to cut into and crush the wooden rails was another. The cutting was severe when the rails were of softwoods and the loads heavy; and an early improvement consisted in nailing hardwood strips or laths on top of the rails to provide a hard surface for the wheels.

The next step brought in the iron strip in place of the wooden lath; but that change took place generally about the time the draft mule that had pulled the loads retired in favor of the light locomotive which was stronger than a mule and more speedy. Development followed development in track building and motive power in logging operation until finally the present stage was reached.

Many logging roads are now built in a manner about as substantial as trunk lines, with regard to track, rails, ties, ballast, bridges, and equipment. Some lines which are constructed primarily as logging roads, develop into public carriers as business grows along their lines, and they finally become parts of the country's regular railway systems. Thus the tapline may be the first link in a trunk line. It is not unusual for logs to be

expended of some of the speed. Enormous loads may be hauled up steep grades and round sharp curves where an ordinary locomotive would be useless. The geared locomotive hauls commodities other than logs, but it does better work nowhere than in logging operations among mountains. It will pull loaded trains up grades as steep as fifteen or even seventeen per cent.



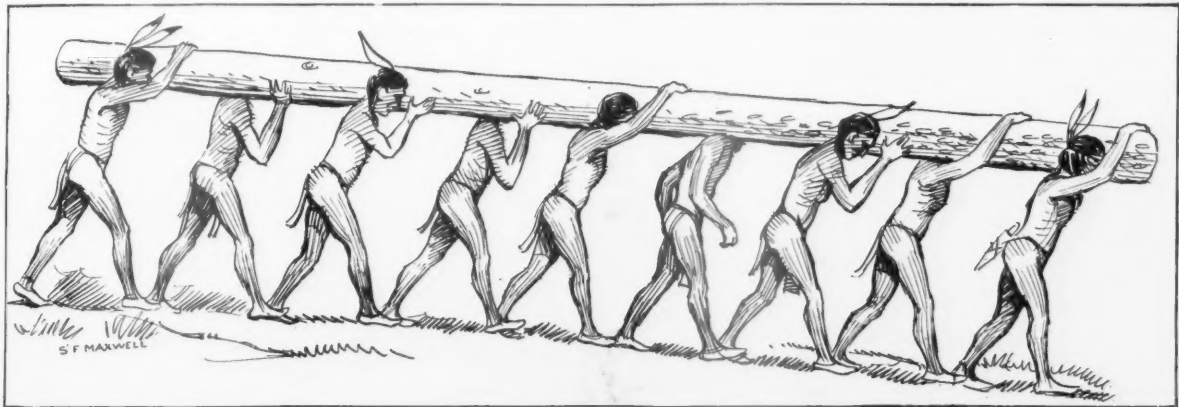
THE FIRST OVERHEAD SKIDDER

The work is here being done on a rather small scale, yet all the principles of the modern skidder are present. The cut is from an old photograph taken near Luddington, Michigan, back in the eighties. It marked the beginning of a revolution in handling logs.

Powerful machines known as skidders or loaders have been invented to move logs rapidly and at relatively small cost, and to operate in localities too rough for ordinary railroads or for ordinary methods of moving logs from the forest to the loading platforms. These machines drag or carry the logs which are attached to cables. They represent the acme of engineering skill as applied to lumber operations. They quickly transport logs hundreds or thou-

sands of feet, across rivers, or over ravines, or out of swamps, or up hill or down. They have made logging practicable in situations where it would otherwise be impossible.

It is said that the first successful skidder was used near Luddington, Michigan, in 1883. It was an overhead machine, and with its success began the triumph of



PRIMITIVE TRANSPORTATION OF TIMBER

The above drawing is based on an old Jesuit description of the transportation of logs about the year 1774 from the Cuayamaca Mountains to San Diego, California, to build the mission at that place. The logs were carried sixty miles on the shoulders of Indians. That was indeed getting "back to first principles."

hauled by rail a hundred miles from forest to mill, and the transportation of logs in that manner has become an important business.

Railroads built for logging purposes must frequently be constructed up and down slopes too steep to be negotiated by ordinary locomotives. To overcome that handicap, engines have been built with geared wheels, by which arrangement great power is made available, at the

American ingenuity in moving logs by steam machinery. Skidders appeared quickly in various parts of the United States, and from this country they were introduced into all parts of the world where lumbering is carried on in a large way.

Green logs, as they come out of the woods fresh from the axes and crosscut saws of the cutters, are heavy. They vary, of course, in weight, depending upon species

and other factors; but nearly all logs when green weigh two or three times as much as the lumber which is cut from them will weigh when dry. That fact is duly considered when planning the transportation of logs long distances. There is a limit in distance beyond which green logs cannot be hauled profitably because of the accumulation of freight charges. It may become more economical to build the mill near the log supply, and haul the seasoned lumber to market. Were it not for the cost of hauling the green logs so far, large sawmills would be built in cities like New York and Chicago, where the lumber when sawed would already be at the market, and the slabs, sawdust, and other scraps would be salable. A precise limit cannot be set to the distance that green sawlogs may be profitably hauled. Circumstances must determine the question in each instance; but the fact that green logs are being hauled more than a hundred miles in a number

of instances is proof that sawmills are able to draw supplies of logs from areas of more than 25,000 square miles in extent. Figures like these would have been regarded as preposterous by the pioneer sawmill men who thought it a hardship to haul logs a mile to supply their mills.

In some instances sawlogs are hauled nearly a thousand miles by rail before passing through a sawmill,

but this happens only with logs of unusual value. It is more common with mahogany than with any others. Logs of this wood may be landed at New York or at New Orleans from Africa or Central America, and thence they are carried by the railroads to Louisville, Cincinnati, St. Louis, or Chicago, to be converted into lumber or

vener. The wood's great value renders the freight charge of relative small moment, and it is found more profitable to carry the logs to the market centers than to convert them into finished products at distant points, and afterwards haul the products. It is not unusual to transport mahogany, Circassian walnut, teak, rosewood, and ebony logs five thousand or even ten thousand miles to reach a sawmill; but that is out of the question with woods of less value. In most cases it is good business to convert sawlogs into lumber as near as circumstances will allow to the place where the trees grew; but if there is water carriage, the distance is of

less importance because freight rates by water are usually low.

The owner or prospective purchaser of a skidway of logs, or logs on a landing or in the woods, or a boom filled with logs, may wish to know how much lumber the logs will cut. To measure the size and calculate the contents of each log separately would be an almost intermi-



WHEN THE LOG SKIDDER HAS PASSED ON

What chance would oxen, or even logging railroads have to get logs out of this swamp near Quitman, Georgia. But it is no trouble for the steam skidder. The work has been done here and the machine has passed on to other operations. Without the skidder logging in such swamps would be practically impossible.



A LOUISIANA LOG DUMP

The supply of logs for the mill of the Great Southern Lumber Company at Bogalusa, Louisiana, is a first-class proposition. The logs are rolled from flat cars down skids into the pond and are floated to the mill a few hundred yards distant. Few ponds in the United States receive so many logs as this. Most of them are yellow pine.

nable job, if the number of logs were considerable; but experts have constructed tables of figures intended to show the feet of lumber that may be sawed from logs of all ordinary lengths and diameters. By using such a table the log scaler needs only to take the length and diameter of each log, for the table shows the contents. Nearly half a hundred log rules are or have been in use in the United States and Canada, one rule being recognized as authority in one locality, another elsewhere; but among the most important are those known as Doyle's, Scribner's, Drew's, Spaulding's, the Maine, and the International.

Until about a hundred years ago there were no log rules, except such as various lumbermen worked out for their own convenience; but when the purchase and sale of logs began to assume importance, the need was felt of some measurement which both buyer and seller could recognize and it was then that log rules began to come into use. No rule has yet been worked out that holds true for all sizes of logs. From the nature of the case it is impossible that such a rule could be made, because some of the factors vary and affect the totals. For example, thin saws produce more lumber from a log of certain size than thick saws; and straight, smooth logs yield more than logs crooked and rough; while tapering logs cut to less advantage than those of nearly the same diameter at both ends. The best that any rule can do is to show the average contents of logs of various dimensions. Different rules vary greatly even in that, for which reason it is necessary, in order to head off disputes, that the buyer and the seller of logs agree in advance upon the rule to be used.

Even then there is room for differences. The personal element has something to do with it. Two conscientious scalers, using the same rule, and scaling the same skidway of logs, often show totals of considerable variation. This is due to differences in judgment in allowing for fractions in measurement, and for defects in the logs. Still greater discrepancies result when the same logs are scaled according to different rules. In extreme cases the totals may vary as much as fifty per cent, but the differences are not so egregious when the logs are of various sizes, for, in that case, compensations in one size will usually offset losses in other sizes. The log rules are all based on compromises and averages, and it could not possibly be otherwise, unless a different rule were provided for logs of each and every size and shape.

When timber was abundant and cheap, only large and finely formed trees of desirable species were cut. It was the custom to sell lumber ungraded, or slightly graded, and the purchaser would accept nothing but the best. The log cutter culled the tracts and left the second-class trees standing. Nobody wanted them. That is changed now. Forests are usually cut clean. Every species and every size goes to the log yard, except what is absolutely worthless. Logs as small as six inches in diameter are cut. There is little profit in such but it pays better to take them than to leave them. The field of utilization is now so wide and products are so varied that every piece of wood meets a demand, though it may be suitable only for a plasterer's lath or a nail keg stave.

TREES FROM PENNSYLVANIA FOR DESOLATED FRANCE

THE Pennsylvania Department of Forestry, through Governor Brumbaugh, has offered to the French Government a gift of 4,000,000 forest trees seedlings from the State Forest nurseries, to be used in reforesting the shell-torn woods in the battle grounds of eastern France. The tender will be made by Col. Henry S. Graves, who organized the work of the forest regiments in France. Following is Governor Brumbaugh's letter to Colonel Graves:

"My dear Col. Graves:

"I beg to invite your attention to the accompanying communication from Hon. Robert S. Conklin, Commissioner of Forestry of this Commonwealth, in which he suggests the tender of four million white pine seedlings to the French Government to reforest the eastern part of that country, which section we understand has been devastated by the war.

"I beg to say that the suggestion contained in this communication meets with my cordial approval, and if you will be good enough to bring this to the attention of the French authorities, we shall be very happy to carry out the tender made, and place at their disposal any reasonable number of seedlings which it is possible for them to utilize. Very truly yours,

M. G. BRUMBAUGH."

It is not thought that such a large number of trees can be planted while the war is in progress. The offer is made subject to acceptance at any time within the next two or three years. Much of the ground which needs reforesting is now within the war zone. Foresters who have been over parts of the occupied territory are of the opinion that it may be necessary to plant even some of the agricultural land to trees, and then clear it again for farming after the trees have reached maturity.

Pennsylvania is glad to tender this service to the heroic French nation, the courage and tenacity of whose defense have aroused the admiration of the world. She is willing not only to send her sons to the battlefield, but will add thereto such other material assistance as may be necessary to bind up the wounds of this stricken nation.

In addition to the proffer of the planting stock, the Department is ready, if need be, to send a group of her remaining foresters to France to assist in re-establishing her broken forests. It is possible, if the offer be accepted, that parts of the forest regiments now in France may be held there to do planting. The Pennsylvania Forest Service has about forty men in these regiments.

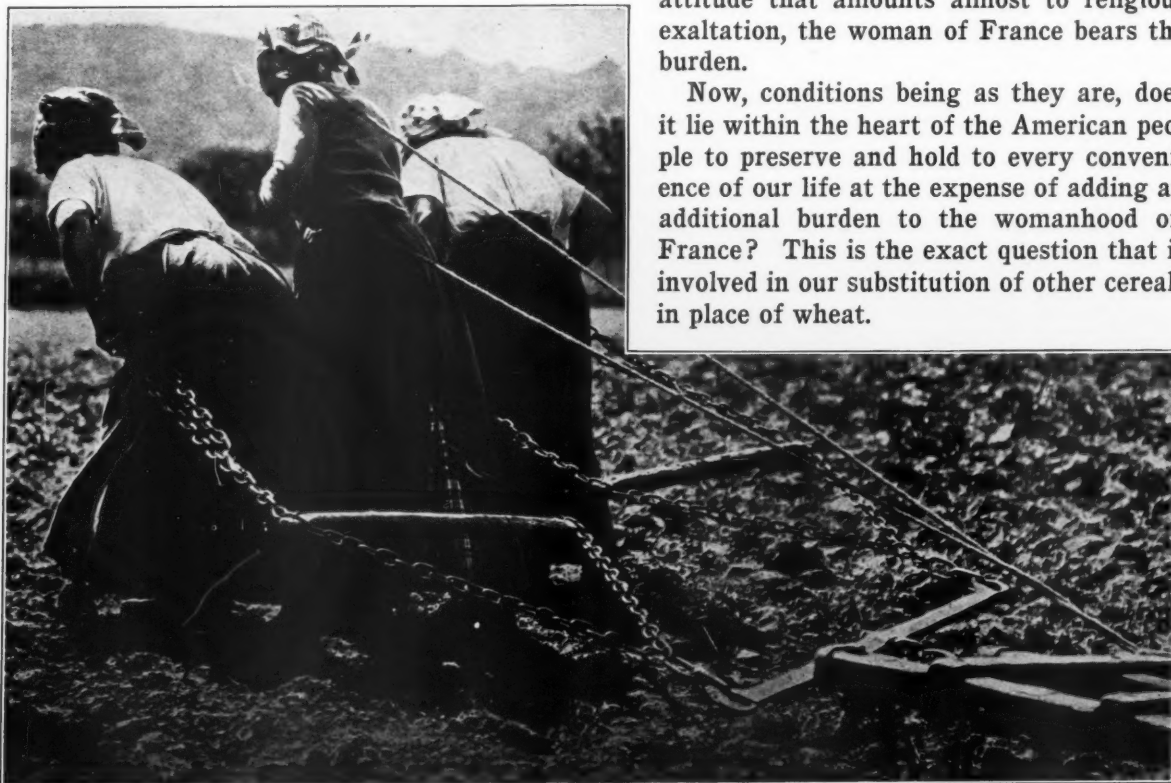
HEROIC WOMEN OF FRANCE

BY DR. ALONZO TAYLOR

MY words are not powerful enough to do even scanty justice to the most heroic figure in the modern world, and of ages past—the woman of France. Of the healthy men who are engaged in the military service in France,

and cultivating the soil. All of the agriculture rests upon their shoulders. The home, always an extremely efficient home, maintains a few old men, the wounded, and the tubercular. Uncomplaining, with high devotion, with an attitude that amounts almost to religious exaltation, the woman of France bears the burden.

Now, conditions being as they are, does it lie within the heart of the American people to preserve and hold to every convenience of our life at the expense of adding an additional burden to the womanhood of France? This is the exact question that is involved in our substitution of other cereals in place of wheat.



practically all are engaged either in transportation or in the manufacture of munitions, leaving the agriculture absolutely to the women. Not only this, but they have stepped into the place of work animals; you can go into any section of France today and see women of magnificent, noble womanhood hitched to the plough

The women of France must be enabled to hold up the morale of the French soldier. The morale of the house decides the morale of the soldier in the fighting line. We can do this by giving to them the greatest possible freedom in their food supply, and of this, wheat is the chief factor.

THERE is still time to cut a few cords of wood for next winter before the spring farm work is under way. Village folks should be getting their orders in for next winter's supply of cordwood.

UNDER the auspices of the Forestry School of the State University of Montana a two weeks' summer camp is to be constructed on the Flathead Indian Reservation during the month of May.

IT is with deep regret that we report the death in France on March 31, 1918, of Major E. E. Hartwick, formerly of Detroit, of the First Battalion, Twentieth Engineers (Forest), and of Lieut. John G. Kelley, of the Tenth Engineers (Forest), on March 15.

THE DIURNAL BIRDS OF PREY—HAWKS, EAGLES AND VULTURES

(Families Buteonidae Falconidae, Pandionidae and Cathartidae)

BY A. A. ALLEN, PH.D.

ASSISTANT PROFESSOR OF ORNITHOLOGY, CORNELL UNIVERSITY

NATURE does not intend her children to lead easy lives. As soon as life becomes easy, progress ceases and decay sets in. There must be constant struggle and competition and only the best and strongest must live to perpetuate their kind. She has little time to waste on the weak or the lazy; the sooner they are out of the way, the better for the rest. So Nature has provided obstacles which every organism must surmount to reach maturity, and enemies to its adult life which require constant alertness and courage to escape. She provides every organism with a capacity for reproduction commensurate with number of obstacles or enemies with which it must cope, so that, though many may fall by the wayside, the most virile and progressive individuals will be left to continue the race. Wherever Nature exists unmodified by man, we find a balance of these two great forces, that of reproduction and that of destruction.

A single protozoon in a jar of water will, in a few days, cause the entire jar to appear milky with its thousands of offspring in order that at least one of its children may reach maturity and be carried to some other suitable environment. A soft-bodied, helpless plant louse reproduces at the rate of over ten sextillion a year for the same reason, and the oak tree showers its acorns on the ground every season, that at least one may be carried to fertile ground, surmount the obstacles of browsing animals and defoliating insects and at last bear acorns of its own. The protozoon, or the plant louse or the oak tree that finally reaches maturity is the pick of thousands and has all the vitality of its parents and usually a little more. For it is thus that nature progresses and thus that the most complicated organisms and even man have evolved from the lower and more simple.

And so we find whole groups of organisms intended by nature to cull out the weaker individuals of other species and thus assist the process of evolution. Among animals it is the carnivores, the tigers, the wolves, the

bears, the weasels and their kin. Among birds it is the birds of prey, the hawks and the owls, that perform this necessary function of insuring the strength of the different species of birds.

Of course man does not feel the need of this method of maintaining the strength of his domestic fowls and rues the slightest pillaging of his poultry yard or game covers. Fortunately there are few species that indulge freely in this thievery and the majority more than make

up for it in their destruction of harmful rodents, for the food of hawks is composed even more of rodents than of birds.

There are nearly 500 different kinds of hawks, found in all parts of the world. Many species resemble each other very closely, others have diverged widely, but all can be recognized by their short, hooked bills, their strong talons, and the absence of the facial disk which characterizes the owls. Parrots, which are somewhat hawk-like in appearance, have very thick bills and have two toes directed forward and two backward instead of three in front and one behind.

Hawks vary in size from the gigantic condor and the California vulture, the former measuring over 12

feet from tip to tip of the wings, to the pigmy falcons of India, which are scarcely larger than sparrows. The females are usually larger than the males, frequently exceeding them by several inches in length. Thus the male Cooper's hawk measures but a little over fifteen inches in length while the female averages 19 inches.

Most species are inconspicuously marked with brown and gray but some have quite striking patterns of blue and reddish brown. With some species, like the marsh hawk, the male and female are different, but usually the adults are colored alike and the immature are different. The adults tend to become very gray above and barred below while the immatures are brownish above and streaked rather than barred on the breast. The color patterns of many species are so similar that it is much



OUR NATIONAL BIRD

The liberty bird that permits no liberties. All hawks can be distinguished by their sharply hooked bills and the absence of the facial disk which characterizes the owls.



Photograph by G. A. Bailey.

THE EYRIE OF THE BALD EAGLE

The broad wings and fanlike tail are adaptations for a soaring flight found also in the Red-tailed, Red-shouldered, Broad-winged and certain other hawks commonly called "hen hawks." Birds of this type seldom, if ever, take poultry, for they feed on small rodents, the bald eagle upon fish.

easier to distinguish them by their size or their shape than by their colors. Thus the red-tailed, red-shouldered, broad-winged, and rough-legged hawks all have very large, rounded wings and broad, fanlike tails; the goshawks, Cooper's, and sharp-shinned hawks have short,



Photograph by H. H. Knight.

THE PRIDE OF THE HAWK FAMILY

A Duck hawk chasing a swallow. The falcons have pointed wings like the swallows and are built for speed. They strike their victims in full flight and sometimes kill for the sport of killing. This is the bird used pre-eminently in the days of falconing.

rounded wings and narrow tails; the marsh hawk and the fish hawk have long, narrow wings and the falcons have very pointed wings. Each type is adapted for a particular feeding habit: the large winged species circle high overhead on watch for their prey and their wings and tails are therefore adapted for soaring; the short winged hawks lie in wait for their prey in the shelter of the foliage and their wings are adapted to sudden bursts of speed from a stationary position; the long narrow winged hawks beat back and forth over the meadow or the water and are on the wing for long periods of time and their wings are adapted for sailing and long con-



A TURKEY VULTURE ALIGHTING

The huge wing expanse of the vultures enables them to soar for hours without apparently moving their wings and gives them a majestic appearance. On the ground and close by, however, they seem clumsy and their naked heads are almost revolting.

tinued flights. The falcons pursue their prey, striking it in full flight and, therefore, have pointed wings adapted for great speed.

All hawks are carnivorous but the diet of some species consists largely of insects, snails, frogs, snakes, lizards or fish and some are scavengers and feed upon decaying animal matter. Their value in controlling small rodents can scarcely be overestimated.

The eyesight of hawks is extremely keen and their power of focal adjustment is wonderful. From hundreds of feet overhead, they scan the ground and are able to see the tiniest mouse or lizard. In the instant required for them to drop from that height and pounce upon their

victims, their eyes change from long focus to short focus and the adjustment is so instantaneous that they follow their prey with clear vision. The eyes of hawks are smaller than those of the owls for all the species are diurnal, although some species, like the rough-legged, are most active toward dusk and the tropical laughing falcons can be heard long after dark. Hawks' eyes vary in color from yellow to red, some being gray and others brown. Young birds usually have different colored eyes from the adults, those of the Cooper's hawk, for example, changing with maturity from yellow to bright red.

The voices of hawks, for the most part, are harsh discordant screams, quite in keeping with their wild natures. The short winged species like the sharp-shinned and Cooper's hawks, that lie in wait for their prey, are usually silent except on their nesting grounds, but the others call frequently as though to strike fear in their quarry.



THE HOME OF THE BLACK VULTURE

No nest is built, the eggs being laid on the ground beneath a log or boulder. This bird was nesting on Ancon Hill, Canal Zone, Panama.

There are four families of hawks found in North America but, with the exception of the vultures, they may well be considered together. The family Buteonidae includes the majority of the hawks which are variously known as the broad-winged hawks, also called buzzards in Europe, kites, harriers, eagles, goshawks, etc. The family Falconidae includes the falcons and the caracaras, the latter being degenerate falcons that have become largely vulturine in their habits. The family Pandionidae includes only the fish hawks or ospreys which differ from other hawks in having one toe reversible so that a better fish gaff may be formed. The family of vultures, Cathartidae, are degenerate hawks having naked heads and weak feet, that feed almost entirely upon carrion.

The Vultures (Family Cathartidae).

There are nine species in the family Cathartidae, confined entirely to the New World. The Old World vul-



A LONG-WINGED HAWK—THE MARSH HAWK

The Marsh hawk seldom alights in trees, but usually has an exposed stub from which he can keep a lookout near his nest. The Marsh hawk occasionally takes marsh birds or young ducks, but usually feeds upon mice and frogs.

tures, although very similar in general appearance, are put in a different family. In North America there are but three species and one of these, the California vulture, is nearing extinction because of the poisoning of carcasses by rangers to kill wolves and coyotes. This is



Photograph by Herbert K. Job.

COOPER'S HAWK ON NEST IN HEMLOCK FROM ABOVE

This is one of the short-winged, long-tailed hawks which are so destructive to birds and poultry. With the sharp-shinned and goshawk they account for 90 per cent of the depredations on the poultry yard.

one of the largest and most majestic birds of flight in the world, some individuals measuring eleven feet from tip to tip of wings. Every effort should be made to save the remnant still living in remote portions of the California mountains. The other two species, the turkey and black vultures or "buzzards" as they are sometimes called, are very common in southern United States and occur as far north as New York and New England.

The turkey vulture is the larger of the two and can be distinguished by its red head and longer wings and tail. The black vulture, having shorter wings, does not soar so continuously but flaps its wings more frequently while flying. The black vulture is more tropical and is seldom seen north of Virginia or Indiana. Both the turkey and black vultures have uniformly black plumage and naked heads and have the habit of soaring high on steady pinions, often rising far above the clouds without any apparent motion of the wings. Again they will set their flight in one direction and disappear from sight. One of the most remarkable phenomena in connection with the vultures is the rapidity with which a flock will assemble about a dead animal, for in

carcass is entirely concealed, the vultures do not discover it.

The value of vultures as scavengers was never questioned until recent years when it was supposed that they might assist in the spread of anthrax among cattle, and in some states, the laws that had always given them protection were repealed. Few persons, however, bear the vultures any grudge and they will probably thrive even without protection of the law. In most places they seem to recognize the good will of mankind and are not in the least timid. This is particularly true of the black vultures, which in the streets and market places of some southern cities form a regular part of the

street cleaning service. In parts of South America they are likewise employed to clean the hides of cattle of all flesh and fat. The hides are stretched on large frames and stood out where the vultures are waiting and the scraping which is usually a tedious process is found entirely unnecessary.

Except during the nesting season, vultures usually resort to a common roosting place toward which they can be seen sailing after sunset. Another common sight is to see



READY FOR BED—BLACK VULTURES ON THEIR ROOST

Except during the nesting seasons, vultures resort to a common roost each night, sailing to it from all directions toward sunset, just as do our Northern crows. This shows a branch on such a roost above Panama in the Canal Zone.



Photograph by J. T. Lloyd

CONSERVATION OF LABOR—A NOVEL WAY OF CLEANING HIDES PRACTICED IN COLOMBIA

The hides are stretched, without cleaning, on large frames and the vultures do the rest, removing all flesh and fat until the hides are as clean as though hours of hard labor had been spent upon them.

addition to scanning the ground, vultures keep watch on each other and when one indicates, by a change in its flight, that it has discovered something, all the others, that have been watching it for miles around, flock to the spot. Their vision is extraordinary, for the smallest dead snake or mouse does not escape detection by birds several hundred feet up in the air. It was at one time believed that their eyes were assisted by a very keen sense of smell, but it has been shown that if a strong smelling

them in early morning or after showers perched on the gables with spread wings drying their feathers.

Vultures lay their spotted eggs either on the ground under a log or in a hollow log or cave, or sometimes high up in a hollow tree. The young are covered with whitish down and are helpless for a long time. In fact, the South American Condor, which is the largest of the family, is said to feed its young on the nesting ledge for nearly a year before they are able to soar like their parents.

MINNESOTA STATE FORESTS

BY W. T. COX

STATE FORESTER

MINNESOTA now has a fair start in forestry. The Federal Government some years ago granted to the state the lands at the headwaters of the Mississippi, to which have been added a number of other sections purchased by the state,—constituting Itasca State Park or Forest. This includes Lake Itasca, the source of the Mississippi, and 22,000 acres, mostly virgin forest, surrounding it.

Burntside Forest, in the Vermilion Iron Range, con-

ducting the management of the state forests must be established without the aid of precedents within the state. So far as possible, the experience of the national government in managing its forests will be used as a guide to make this work successful. We must bear in mind that these state forests are to be managed by the Forestry Board as estates in trust, of which the school, the university, the internal improvement, and the swamp land funds are the beneficiaries. The public must interest itself in its forests and give hearty co-operation if their management is to be successful. Wisely managed, they will increase in productive value year after year.

The state lands constituting the new state forests are embraced within the territory extending from Rainy Lake to Lake Superior, and from Vermilion and Pelican Lakes to the International Boundary. Nearly all of this land is so rocky or so hilly that agriculture on it would not be profitable. Persons not familiar with conditions of tree growth may



TYPICAL SCENERY ALONG

Most of the lakes are clear and deep, their shores covered with primeval forest to the water's edge.

sists of 20,000 acres granted to the state for forest purposes by the federal government. Pillsbury Forest, of 1,000 acres, was given to the state by the late Governor Pillsbury.

Three years ago, the people of Minnesota, through an amendment to the constitution, authorized the legislature to establish state forests to be managed on forestry principles, and the legislature at its session last winter created state forests aggregating over 350,000 acres. It left to the Forestry Board authority to work out the details of their management and the administration of these lands. By the enactment of this legislation a complete cycle was established whereby the state on its own lands provided for sustained production of timber products. The principle that makes forestry a business of the state is recognized and its practice authorized. It now becomes the duty of the State Forestry Board to regulate this practice along broad and constructive business lines. The regulation and order of procedure for



THE LAKE SHORES—IDEAL COUNTRY FOR THE CANOEIST

An infinite variety of choice is offered to the camper, fisherman or canoeist to follow the trail through the primitive wilderness.

ask how trees can grow on land where agriculture crops are not practicable. This question is easily answered by a trip through the forest country of northeastern Minnesota and adjoining parts of Ontario. It is by no means claimed that there is no agricultural land in northeastern Minnesota. There is a great deal of it, and it is land which can be made very productive; but on those portions which have been or will be selected as permanent state forests, agriculture will not be practicable within any reasonable time.

As foresters well know, trees not only grow on rocky land, but in many cases seem to prefer it. The young trees will start among the boulders of hillsides or in the crevices of solid rock, and the roots will then creep into the places where moisture is always present, and will even pry apart rocks and boulders while the small feeding roots make use of every particle of soil. If one should see now some of the barren, rocky, cut-over or burned-over land, it would at once be apparent that it could not be profitably cleared of stones in order to be utilized for cultivation, because the boulders lie so close together that it is easily possible to step from one to another. On some of the extensive bedrock areas, the soil covering is too thin to permit of repeated plowing, and if denuded of forest covering the soil would blow or wash

growth of trees: First, land that is strewn thickly with boulders; second, land on which the soil cover over the bed rock is too thin or entirely wanting; third, land with too steep a slope; fourth, gravel or sand where the water level lies too deep. In connection with the latter point, on very sandy or gravelly land—such as some of the poorer jack pine country—trees once established will reach the water level with their roots and do well, while farm crops would fail except in very wet seasons; and besides, when sheltering trees have been removed the sand would drift.

If lands such as these were put on the market as agricultural, it would simply have this result: Some man who has saved a few hundred dollars and wants to buy cheap land, but is no judge of its agricultural value, is



A SECTION OF THE SHORE LINE OF BEAUTIFUL SLIM LAKE, NORTH OF ELY

Innumerable lakes and streams are to be found, of all sizes and kinds, and to the lover of camping and outdoor life no more completely satisfying surroundings can be imagined than those offered by the wonderful state forests of Minnesota.

away, and the vegetable duff would burn up in case it ever caught fire. On steep hillsides where the soil might be deep enough for crops, the vegetable mold would soon erode if the protective covering of brush and trees with their roots were removed. One may see many illustrations of this kind of soil erosion along streams of Minnesota, not only in the north but in the southern part of the state as well. Many thousands of acres of bluffs along the streams of southeastern Minnesota, where there has been excessive pasturing or cropping of land which now lies idle, should never have been denuded of their original cover of timber.

In this part of the country there are four conditions which make land unprofitable for agriculture, but which nevertheless interfere very little or not at all with a good

likely to have this kind of a "farm" unloaded on him. He will stay on it a year or two, spend the money that he has saved, and then become discouraged and let the property revert to the speculator who sold it. If the speculator's conscience is as elastic as his purse he will again sell the land, and the process will be repeated indefinitely. In the meantime, the disappointed purchaser will do a great deal of "black eye" advertising for the other great areas of our northern Minnesota lands which have excellent agricultural possibilities, and ought to be settled by farmers.

From these non-agricultural lands, if left in forest, the adjacent settlements and the state will derive much benefit. As soon as the market conditions and transportation facilities warrant, the mature timber can be sold

and marketed for the benefit of the state; in fact, sales have already been made, and conservative instead of destructive logging will be conducted. If the adjoining regions are agricultural and become settled, the settlers will find in the state lands a permanent supply of timber for fuel, fencing and building purposes. They will be able to use their teams in winter woods work and to sell their produce at good prices in the logging camps. The forests on these lands will preserve the moisture and furnish a permanent water supply for the many small streams that head in them. They will become perpetual breeding grounds for game, game birds and fur bearing animals, and will be invaluable in attracting hunters, campers and tourists to the state. Moreover, the time is rapidly coming when many more people from the cities of the Mississippi Valley will want to build summer camps or homes of more or less permanence in the wilder parts of the state, and these state lands leased to such people will bring a large revenue to the state direct as well as to the people of the state generally.

The new state forests are situated in the great coniferous country. The two dominant trees are the white and Norway pine. There is considerable jack pine, and many other fine evergreens such as white and black spruce, balsam and cedar,—the latter varieties growing in situations not suitable for pine. There are, however, enough broad-leaved trees to add variety and to give to the more somber evergreens the charm of the mixed forest. Predominant among the broad-leaved trees are the paper birch, the common poplar or aspen, the yellow birch, large-toothed aspen, elm, ash, hornbeam, and even sugar maple on some of the rocky ridges.

No comprehensive estimate has ever been made of the timber on these lands; but the forest rangers, in connection with their fire protective work and slash disposal inspection, have gained a fair idea of the timber on considerable portions, and the state forester in a more or less systematic way has seen and collected data on other portions. It may be said, of the 350,000 acres in the state forests, 125,000 acres are fairly well timbered lands with upward of a billion feet of standing timber; 125,000 acres contain young or half grown spruce and pine; and the remaining 100,000 acres have been logged in a

destructive manner or burned so severely that planting is needed to cover the barren hills of rock, or fill in the gaps between the scattered patches of young growth.

There will be a considerable amount of ripe timber to be sold annually from the state forests, bringing a healthy and perpetual revenue to the school fund and other trust funds of the state, and this from lands which otherwise must become worse than unproductive. As the forests are better protected and become better stocked with young trees, mostly of nature's sowing, the returns will increase immensely. Both spruce and pine grow rapidly in northern Minnesota, quite commonly adding five hundred board feet to the acre in a season. This in the case of pine is a revenue of five dollars an acre each year, and in the case of spruce two to three dollars, with the probability of a great rise in spruce values before many years.

It is safe to say that the rocky lands embraced in the state forests, based on a valuation of five to six dollars per acre, will, under forest management, pay to the various trust funds not less than six per cent, which is a fair average profit, and fifty per cent greater than that obtained under the old practice of selling such land and taking four per cent securities.

The scenery is the most variegated and beautiful that can be found within easy reach of the Twin Cities and other centers of population in the Mississippi Valley. Innumerable lakes and streams are to be found, and of all sizes and characters. Most of the lakes are clear and deep, and their shores are covered

with primeval forest to the water's edge. No region offers better opportunities to the camper, the fisherman and the canoeist. In canoe routes there is a choice of all degrees of length and difficulty. Desirable camping sites are everywhere, with good water in the immediate proximity. Much of the country is a primitive wilderness, where one may read the story of creation as he follows trails and canoe routes and worships God in His own temples. So different and so unique is the scenery that a resident of the central or southern section of Minnesota, or other parts of the Mississippi valley, will find this part of the state as strange and wonderful as he would find the scenery of Norway or Switzerland. From Lake Superior the land rises abruptly to a height of from one to two thousand feet. Over this slope tumble



GARDEN ON SHORE OF NORTH LAKE

A large part of the garden was covered with piles of rock. The nature of the ground is indicated by the fact that it took twenty years to clear half an acre.

such streams as the Pigeon River, the Deviltrack River, Poplar River, and innumerable other wild streams full of rapids and cascades. Three or four miles back from Lake Superior the region is a network of lakes and streams. One might travel and canoe all summer and never come twice over the same trail or lake. For a while the canoe may slowly drift on a smooth stream, fringed on either side with green alders; then one may come to a short portage around some rough boiling rapids, and this will perhaps open up a vista of some beautiful lake with numerous bays, islands and peninsulas. At one point the low shore may be fringed with somber forests of black spruce or with bright green tamarack, stretching away indefinitely. Farther on, one will encounter high, rocky cliffs, bold and jagged, rising perpendicularly several hundred feet.

Good fishing of some kind is found everywhere. In many of the cold streams brook trout are very plentiful. Some of the lakes along the International Boundary, such as Gunflint, North and South Lakes, contain large and delicious salmon trout, or lake trout, in great abundance. Many of the lakes abound in pike, crappies and big sunfish, while others contain great northern pike,—

which I can say from personal experience, when caught in these cold and clear waters, are about as good to eat as any fish that swims.

Both moose and deer are numerous. It is common to see from ten to fifteen moose in one day's paddle. A few caribou remain in this region, and now very likely they will increase in numbers. Besides moose and deer, all the wild animals which originally inhabited the northern forests are still to be found here, with the exception of the panther and possibly the wolverine. Bears and wolves and the small fur-bearing animals are all fairly numerous, but none of these creatures ever molest any campers; in fact, one seldom sees them unless he travels very silently and takes special pains to discover them. But deer and moose may be seen in the lakes and rivers very frequently on warm summer days, when they come to feed on aquatic plants and to get rid of the flies. Perhaps the most interesting animal in the whole of North America is the beaver. It is fairly common in this region and rapidly increasing. The beaver and other fur-bearing animals will eventually contribute no inconsiderable crop of fur to the timber crop and other sources of revenue that will make the new state forests a good investment to the State of Minnesota.

DONATIONS TO THE WELFARE FUND FOR LUMBERMEN AND FORESTERS IN WAR SERVICE

A MERICAN FORESTRY will publish each month the list of those making donations to this fund. Many of the donations from members of the American Forestry Association so far received were made without solicitation and were inspired by reading in the magazine that a relief and comfort fund for men of the forest regiments was to be started. Many substantial contributions are being received from lumber companies and lumbermen following requests sent to them by the Secretary of the Welfare Fund for Lumbermen and Foresters in War Service, by the lumber organizations of which they are members, and by the committees of lumbermen which had charge in various sections of the United States of securing enlistments for the forest regiments. Contributions to May 3, 1918, are as follows:

Previously acknowledged	\$11,825.18	Higgins Lumber Company	25.00
Achenbach, Naomi	3.00	Hudson River Lumber Company	10.00
Amsler, Col. C. W.	10.00	Home Building and Material Company	25.00
Angelina County Lumber Company	10.00	Illinois Lumber and Builders' Supply	25.00
Ascension Red Cypress Co., Ltd.	25.00	Industrial Lumber Company	25.00
Barnes, Miss Anne Hampton	20.00	Indiana Quartered Oak Company	25.00
Baxter Lumber Company	10.00	Kent Company, J. S.	10.00
Beckwith, Mrs. Daniel	25.00	Keystone Lumber Company	50.00
Berwind, John E.	100.00	Kibbee, & Son, A. S.	25.00
Birkle, John A.	3.00	Kingsford, Mrs. E. G.	1.00
Blanchard Lumber Company	25.00	Klumle, C. E.	10.00
Blytheville Lumber Company	10.00	Kreamer Lumber Company	5.00
Borreson, Jules T.	10.00	Kyle Lumber Company, Ltd.	25.00
Bradley, E. J.	5.00	Louisiana Long Leaf Lumber Co.	100.00
Barton Lumber Company, E. P.	50.00	Lufkin Land and Lumber Company	10.00
Brown Lumber Company	25.00	Ludington Lumber Company	10.00
Brown, Mrs. Harry G.	1.00	Lyon Lumber Company	100.00
Burton and Company, J. H.	50.00	McCarroll Lumber Company, Ltd.	12.00
Case Fowler Lumber Company	10.00	Mengel and Bro. Company, C. C.	25.00
Chapman, S. F.	25.00	Merritt Bros., Inc.	25.00
Cherry River Boom and Lumber Company	100.00	Milne, Hall & Johns Co., Inc.	25.00
Clark Lumber Company, J. S. H.	10.00	Morrow, Dr. William G.	1.00
Coppock & Sons Lumber Company, S. P.	10.00	Natalbany Lumber Company	50.00
Cornell Foresters	15.00	National Lumber and Creosoting Company	10.00
Douglas Fir Club	520.00	Newell Lumber Company	10.00
Eckert, Harry K.	6.00	Norton, E. E.	10.00
Ellington & Guy, Inc.	10.00	Norwich Lumber Company	100.00
Tommy and Betty Fleming	25.00	Ozone Lumber Company	10.00
Forest Lumber Company	100.00	Pickett, Hyde and Langgans Company	10.00
Gelpcke, Miss A. C.	5.00	Pine Plume Lumber Company	25.00
Germain & Boyde Lumber Company	25.00	Poittevant and Favre Lumber Company	45.00
Gerrans, R. D.	4.00	Schofield Bros.	25.00
Good Pine Lumber Company	25.00	Red Rose City	5.00
Great Southern Lumber Company	100.00	Rich Lumber Company	25.00
Grogan Lumber Company	25.00	John L. Roper Lumber Company	58.95
Hayes, Rutherford P.	5.00	Roper Plant Employees	24.55
Hammond Lumber Company, Ltd.	15.00	Salmen Brick and Lumber Company	20.00
Hebard Cypress Company	100.00		

(Continued on Page 294)

FLOWERS OF LATE SPRING AND EARLY SUMMER

BY R. W. SHUFELDT, C. M. Z. S.

MAJOR, MEDICAL CORPS, U. S. ARMY, HON. MEMBR. ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION

THROUGHOUT the entire country, in so far as the United States is concerned, one may truthfully say that during the month of May and far into June, the collector, student, and photographer of our wild flowers certainly has a task on hand of the first magnitude. In the meadows, all through the woods, and along the streams and river-bank, flowering plants, representing hundreds of groups, families, genera, and species, are in evidence everywhere, the whole displaying an array of color and form that, to the eyes of the enthusiastic nature lover, is quite bewildering.

As you pass through a reach of open woods, you find

tiful tan carpet below, composed of the dead leaves of the year before. A strong, piney odor in the air is good proof of which kind of tree furnished the great patches of dead leaves on the ground; and where naked areas occur in such woods the crow-foot violets grow in plenty. (Fig. 1.) Rarely do they grow close together, but rather in scattered lots, from two or three inches to a yard apart. A few blue violets may be there, too, and what beauties they are!

It is high and dry here; and, as the conifers have, to a large extent, shielded the ground from the snows of the winter just past, the carpet of dead leaves is pretty



TWO OF THE BEST KNOWN SPECIES OF VIOLETS

Fig. 1. These flowers are among the most beautiful that appear in the early summer, and they are deservedly great favorites with every one. The ones on the right, with dark petals above, are known as the Crowfootviolets (*Viola pedata*), and on the left we have a single plant of the common Blue violet (*Viola sagittata*).

the tall, straight tulip trees to be in full leaf, and shortly they will be in full flower. In some places they stand in close groups of three or four, while here and there great single ones are seen, each of fine proportions, straight as ramrods, limbless for at least two-thirds of their heights in any case, and topping off at an hundred feet above the ground. Fine oaks and chestnuts also make up this wood, while shade is afforded by the hemlocks and their kind.

All these different species of trees grow well apart, but meet overhead to a greater or less degree, and the sunlight struggles through to light up, here and there, the beau-

much in the same condition as when it was laid down the autumn before. As we pass along to a lower level, however, the dead leaves disappear entirely, or else are to be seen but in soggy, matted, and wet patches among the tufts of ferns, mandrakes, skunk cabbages, and early grasses. Violets are not to be seen here, but we easily find many of the swamp flowers that bloom in May.

Further along, the trees are of a greater growth, more symmetrical in outline, and scattered. Here, too, patches of blackberry bramble are massed along the rail fences, and the lay of the land indicates hilly and open ground

nearby. This is an ideal place in which to meet with many flowers not to be seen in the wet and swampy area just left—among others our little favorite, the yellow star-grass. (Fig. 2.) Our botanists have placed this



THE YELLOW STAR GRASS

Fig. 2. Note that the scape of this well-known little plant of the meadows bears from one to four flower-heads. As a rule, but one or two flowers blossom at a time; but for all that, their brilliant yellow color catches the eye at once.

delicate little plant in the Amaryllis family and named it *Hypoxis hirsuta*, the generic term being from a Greek word formerly applied to a plant having leaves that were quite sour (sub-acid) to the taste. Plenty of these grow here, at least a dozen plants or more growing among the thin grass several yards apart. We also have a blue and a red star-grass, each having smaller flowers than the yellow species, which last is found over a wide range of country in the United States—practically all over the eastern section of the country well into eastern Kansas and Texas. Small bees are principally responsible for the fertilization of its flowers, especially bees of the genus *Halictus*. But it does not depend upon these altogether, for it may be self-fertilized, and a few butterflies visit its at-

tractive flowers, accomplishing what the bees and the flowers themselves leave undone.

Of course, yellow star-grass has no relation, botanically speaking, to any "grass," neither has the blue-flowered species; moreover, the plants themselves belong to entirely different families. The best places in which to look for this yellow star-grass are dry, open woods; out on the prairies, and in grassy fields and waste places. Sometimes the plant grows to be at least six inches high; the leaves are more or less hairy, and the root is of the ovate corm variety. The form of its flowers is well shown in the accompanying cut.

Where yellow star-grass grows, we also meet with scattered colonies



WILD COMFREY FLOURISHES IN DRY WOODS

Fig. 3. As a representative of the curious Borage family, it has received various scientific names at the hands of botanists, one of which is *Cynoglossum virginicum*, while Gray places it in the genus *Symphytum*. Bugloss and Heliotrope occur in the same group.

to be found growing only in "low grounds," whereas the example seen in the cut, collected in the District of Columbia, was found on the margin of a wood, on land several hundred feet above the datum-plane. Even Mathews says its habitat may be, and often is, in swampy localities. From western Massachusetts it has wide distribution over all parts of eastern United States, and the writer just mentioned says of it: "The stem bears light green, flat, lance-shaped (blunt) leaves at the base, with several shorter, narrower ones further up, and terminated by a feathery spike 4-10 inches long of

of the interesting wild comfrey, and a thorough study of Figure 3 of this article will give one an excellent idea of this plant. Its flowers are of a lovely, pale blue; it is to be noted that its upper leaves are broadly lanceolate heart-shaped, and that they clasp the rather stout, hairy stem. Sometimes wild comfrey grows to be at least three or four feet in height, but the smaller plants are the most abundant. A large part of the stem of this representative of our eastern flora is devoid of leaves, the stems of its lower, large ones being short and more or less hairy. Four depressed nutlets constitute its fruit, and they are convex and hairy on their upper faces.

Where the wild comfrey grows, we may meet with a specimen or two of the striking blazing star or devil's bit (Fig. 4). Gray claims—indeed all botanists do—that this plant is

small, fragrant flowers, white with a tinting of the yellow stamens characterizing the staminate, and in conspicuous white the pistillate ones. It is quite dependent upon insects for cross-fertilization, the staminate flowers growing on one plant and pistillate on another; the flower-cup has six narrow separating white sepals. The pistillate plant is more leafy. Fruit an oblong capsule."

There are two species of this plant, the one shown here being the *C. luteum* of Gray. He also describes the Southern one, *C. obovale*, which, from all accounts, must be very similar. The first specimen described was an imperfect, dwarfed one—hence the name now retained, which is a Greek one, meaning a ground lily!

In the old and richer parts of the woods, it is no rare thing, in almost any part of the country, to meet with that curious plant known far and wide as Adam and Eve (Fig. 5). Gray retained the name of *Aplectrum hymale* for this plant, while others have it *A. spicatum*. There seems to be but one species of it, though Rydberg has also described *A. shortii*. Gray says of it that "the slender naked roots stock produces each year a globular, solid bulb or corm, often 2.5 cms. in diameter (filled with exceedingly glutinous matter), which sends up, late in summer, a large, oval, many-nerved, plaited leaf lasting through the winter; early in the succeeding summer the scape appears, terminated by a loose raceme of lurid flowers."

During the early part of the summer, many mushrooms and various allied growths are to be met with in the woods, and their study is both interesting and important. Some of them are edible and valuable as food, while others are extremely poisonous and therefore dangerous. Many are gorgeously colored, and beautiful in form, being growths of extreme delicacy in some instances. It is very important to know them well, and to be able to identify promptly and with certainty the edible species. There are some excellent up-to-date books published on mushrooms, and those who constantly study flowers ought to have such works in their libraries.

Earlier in the summer, in the very place where some of the flowers described in the foregoing paragraphs were to be found, in greater or less profusion, we also are greeted by thirty or more scattered

spiderworts. Apparently they were of the species generally described as *Tradescantia virginiana*, the flowers of which are of a rich purplish blue. They derive their name from the elder Tradescant, gardener to Charles the First of England—so Doctor Gray tells us; it occurs in suitable localities from Connecticut to South Carolina. The long, narrow leaves are of a beautiful pea



A CURIOUS SPECIES OF THE LILY FAMILY

Fig. 4. As here represented, the plant has been cut in two near the middle of its stem; this admits of showing the white flowers, stem, leaves and root. Sometimes it grows to be four feet tall.



CURIOSLY CHRISTENED "ADAM AND EVE"

Fig. 5. It is also known as "Putty-root," as the corm is filled with a peculiar and exceedingly glutinous matter. *Aplectrum spicatum* is its scientific name, for it has no spur, as is the case with other Orchids.

green, and the flowers are in clusters. The spiderwort came from Europe, as have so many others of our flowers, and they are now found in a great many of our flower gardens. It is related to the "wandering Jew" (*T. repens*), also long ago cultivated in a similar manner, as well as indoors and in other ways. Less nearly related is the common or Virginia day-flower (*Commelina virginica*), another blue beauty familiar to most of us. As in the case of the last, our spiderwort has its flowers open only during the early part of the forenoon, after which they fold their petals for the balance of the day; thus they thrive until late in August, sometimes. Bumblebees, such as *Bombus pennsylvanicus* and *B. separatus* are doubtless the species responsible for the fertilization of the spiderwort, they being lured by the



OUR COMMON WILD STRAWBERRY (*Fragaria virginiana*)

Fig. 11. Most people are under the impression that the strawberry gets its vernacular name from straw being placed beneath the berries while they are ripening, to keep them clean; but this is erroneous. The term is derived from early Anglo-Saxon, and subsequently a later term, "strawberry," was applied, referring to its straying runners.

abundant supply of nectar yielded by the flowers.

During these late spring and summer days, as we ramble through the woods and fields in search of flowers and other interesting things, we frequently meet with a specimen of the common box tortoise (*Cistudo carolina*), of which reptile a picture is here given, from life, in Figure 8. This specimen was a very handsome old male, with a yellowish black shell, beautifully marked with bright orange spots; his head was similarly speckled. This species lays ellipsoidal, white eggs, and the young are very lovely little creatures. We occasionally find them toddling along at a very slow pace down some wood path or other. One of the most remarkable things to be observed about this Carolina land tortoise is the great variation of its color pattern and in the color itself. The blacks, browns, and yellows of many shades are most irregularly distributed in the various specimens. Old ones are often very light in color, running almost to whitish-yellow; some of these patterns are well shown in Figure 9. We usually have no trouble in distinguishing the male from the female, as in the case of the former the shell underneath (plastron) is more or less concave. We have several species of these land tortoises, while the one here described is the common eastern one.

Coming back to the swampy places, especially in the

open, wet woods along the river bank, we may find a fine specimen of the "Star of Bethlehem" (Fig. 10). Mathews says it is "found most often in fields and meadows, near farm houses." So, as it is a garden escape, having been introduced from Europe, we may meet with it almost anywhere. Its linear, dark green leaves grow in a tuft-like rosette close to the ground, while its flowers grow well above these, each on a single, slender stalk. They are of a glistening white, green-lined outside, the buds appearing to be green and white striped. Some of the latter show in the illustrations, with many of the blossoms fully opened. So, taken all in all, the elegant Star of Bethlehem forms a very striking display wherever it happens to grow, particularly so if we come across it in the deeply shaded woods, along the banks of some river, as was the case with the plant here shown, which grew on the Maryland side of the Potomac, at Great Falls, where stone crop and other plants were also in full bloom at the same time.

Then, as we pass out into the open country again, into the old fields and pastures, there are many more flowers to greet us, among them the charming, wild strawberry (Fig. 11). So well are these known that descriptions of their leaves, flowers, roots, or runners would be quite superfluous. All are well shown in the illustration, except, to be sure, the fruit, which everybody knows. It may not be generally known, however, that we have several species of wild strawberries in this country. We have, for example, the American wood strawberry (*Fragaria americana*), which is an abundant species in open, rocky woods from New England, New Jersey, and Pennsyl-



THE BEAUTIFUL LEAVES OF WILD GINGER

Fig. 12. Our Birthwort family (*Aristolochiaceae*) contains but two genera of plants—in the Middle Atlantic States—namely, Wild Ginger and Birthwort, and no common plant of our rich woods possesses a more lovely leaf than the Wild Ginger (*Asarum virginicum*). It is round heart-shaped, or broadly reniform, and it has a truly wonderful soft, silky feel, once felt is not likely to be forgotten.

vania, westward. It may grow to be fully six inches high, and it has unusually long, slender runners; its leaves are thin, and notably ovate in outline. The sepals are reflexed, away from the smooth, pointed fruit. On the shining surface of the latter, the seeds are borne, not in pitlets, as in the case of the common strawberry, but right on the surface. Another thing, we must note the silvery, pubescent growth on the nether side of the leaves of this species.

It may be as well to state that the strawberries run into the very numerous cinquefoils or five-fingers (*Potentilla*), which latter are also of the *Rosaceae* or rose family, and of which there are many species in this country. Botanists generally considered the yellow-blossomed barren or dry strawberry the single species of the genus *Waldsteinia* (*W. fragaroides*) the plant most nearly related to the cinquefoils; Small described a subspecies of it (*W. parviflora*).

Barren strawberry plants may be found in May and June, in suitable localities, from New England to Georgia, especially on wooded, hill-sides, and from thence westward, half-way to the valley of the Mississippi. This is the plant we know so well, having yellow flowers, and it is easily distinguished from our common wild one. There are several other strawberries in the eastern United States, but they will have to be described at some other

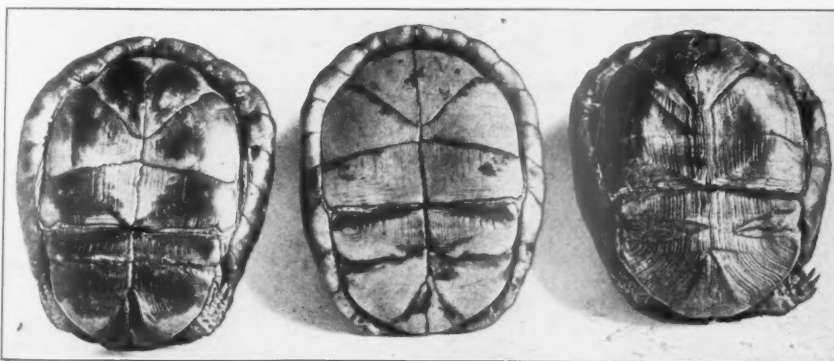
time. The Indian strawberry is one of them (*Duchesnea indica*), with its red, insipid fruit. This genus was named for Antoine Nicholas Duchesne, an early botanist who published a monograph on the strawberry plant. Then, too, near the close of the Seventeenth century, there lived another writer who devoted himself to *Fragaria*—

Dr. Robert Sibbald, at that time a professor at Edinburgh; for him the genus *Sibbaldia* was named. We have another yellow-flowered, low strawberry, which flourishes in Arctic America, southward to Quebec and the White

Mountains of New Hampshire, and in the Rockies of Utah, known as *Sibbaldia procumbens* or Sibbald's strawberry. Another is *Chamaerhodos erecta*, a western prairie species, with white or purplish blossoms, which are crowded together in small, rounded cymes. In the far West there are probably still others, but they will not be referred to here.

One of the most interesting plants we have in the Atlantic States is the common Virginia wild ginger (*Asarabacca*), seen in Figure 12. It is found in both the Virginias, as far south as Georgia. There are several other species of it in the Atlantic States, as far south as Florida

and northward to Connecticut. We find the Virginia wild ginger in various places in the suburban parts of Washington, in the District of Columbia as well as across the river, in the hilly parts of Virginia. It grows in very



THE SHELL OF THE BOX TURTLE IS OFTEN VERY BEAUTIFUL

Fig. 9. These three adult, living specimens of *Cistudo carolina* were collected in the country around Washington. Remarkable differences in coloration are seen to exist, running all the way from yellowish white with darker markings, to where the plastron is black, with no markings, as in the one on the right.



WE HAVE SEVERAL SPECIES OF BOX TURTLES—THIS IS THE COMMON SPECIES (*Cistudo carolina*)

Fig. 8. The study of this animal is most interesting and instructive. It lays ellipsoidal, white eggs, which are either hidden under leaves or buried in soft earth. The young are rarely discovered, even when special search is made for them.

hilly and wooded localities, and may be easily recognized by its kidney-shaped leaves, and by its curious, purplish-brown flowers, which are well shown in the figure. These flowers are solitary, or one on each short stem, and only one flower to each plant. From mammals to insects, no living thing will eat its bitter leaves; and one rarely sees the flowers unless special search is made for them, as they hide themselves down in the leaves and grass, almost entirely out of sight. Neltje Blanchan gives a beautiful account of the wild ginger, and very correctly points out the reason why the flower hides itself in the very early spring. (*Nature's Garden*, p. 374); and Mathews says it is a "curious woodland plant, whose

odd flower is half concealed by its low position, and by its sober color, which not infrequently resembles the leaf-mould just beneath it. Its proximity to the ground, and

the frequent visits of the fungus gnats and the early flesh-flies suggest that these have most to do with the fertilization of the plant."

Many years ago, the old therapists used the wild ginger to make an extract, which was employed in medicine as a tonic; but it must have been a very bitter one, and was probably abandoned on that account, if not for its inefficiency.

Late in the season some of the leaves of wild ginger come to be of very considerable size, sometimes as much as four or five inches across. It is then they possess a peculiar decorative appearance, which would be noted by even unobservant rambles through the woods, while the fact would charm the more careful

observer. The root of the plant has an aromatic flavor; it is bitter and sharp to the taste, and for this reason probably received its name of wild ginger.



WE HAVE A LARGE GROUP OF AMERICAN FLOWERS IN THE LILY FAMILY (*Liliaceae*)

Fig. 10. Among the flowers introduced from Europe is the lovely "Star of Bethlehem," the scientific name of which is *Ornithogalum umbellatum*. The generic name is from the Greek, meaning "bird's milk"—not a "whimsical" name, as Gray supposes, nor the "egg-white color of the flower" (Mathews), but referring to something marvelous, as the marvel of its beauty.

DONATIONS TO THE WELFARE FUND FOR LUMBERMEN AND FORESTERS IN WAR SERVICE

(Continued from Page 288.)

St. Tammany Lumber Mfg. Company.....	20.00
Sanford, F. L.....	10.00
Slicer, Miss Henrietta W.....	2.00
Stewart, Mrs. Cecil.....	10.00
George W. Stoker & Son.....	5.00
Tall Timber Lumber Company.....	25.00
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Wister-Heberton Company.....	5.00
Warner, John.....	5.00
Weaver Bros.....	25.00
Weller, Miss Mame E.....	5.00
Weston Company, W. M.....	25.00
Wilbert's Sons Lumber and Shingle Company,	25.00
Williams Bros. Lumber Company.....	100.00
Williamsport Hardwood Lumber Company...	10.00
Wilson and Cochran.....	15.00
Woods and Company, John M.....	25.00
Woolman, Edward.....	5.00

Total.....\$14,748.68

THE WAY OF JAPANESE NIMRODS

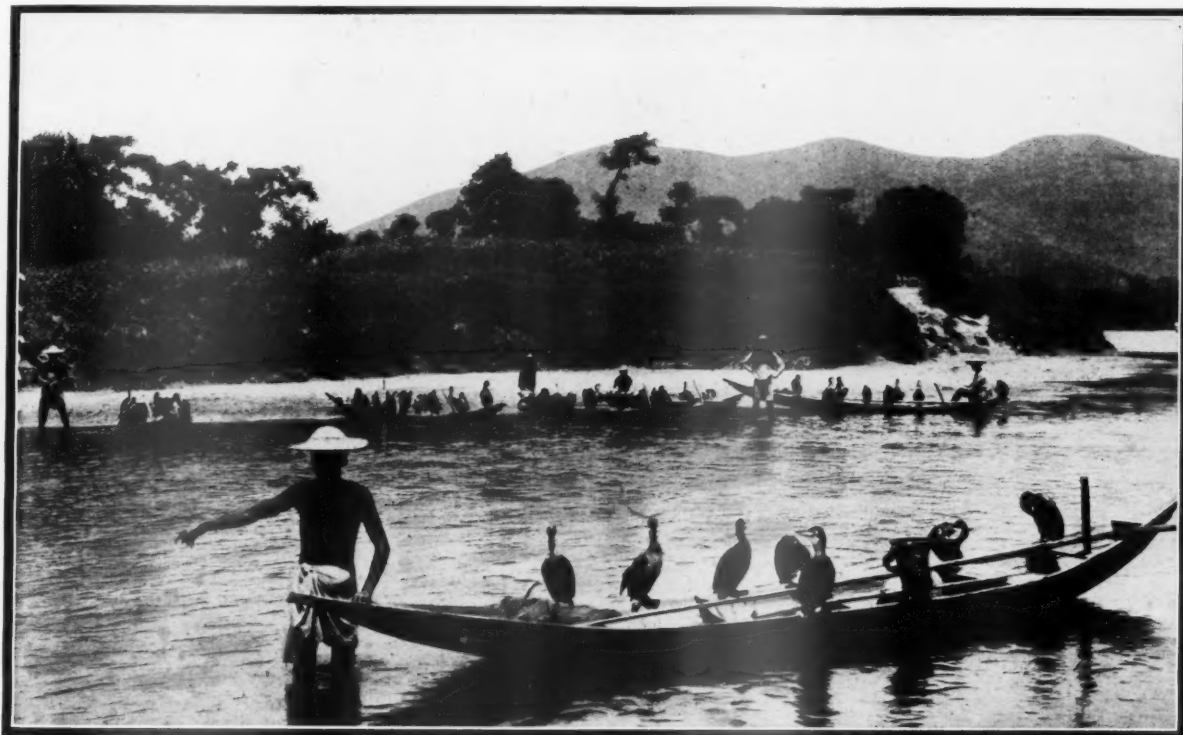
BY GAYNE T. K. NORTON

AN engineering friend, recently returned from Japan, is full of tales and stories of the customs and habits of the Japanese. However, like many travelers, he looked much and saw little, and of the little seen no form of record was kept. It is small pleasure to hear travel stories recounted by such folk. Beyond the engineering work—the work of rebuilding the entire Japanese railway system at a cost of 308,002,000 yen has been started—which he knows very well, the cormorant fishing interested him most.

The custom of using the sea-birds to catch fish for market, a habit practiced today in many parts of Japan, was observed on the Nagara river, near Gifu, in the province of Owari. In certain parts of China the birds are used in the same way. The species of cormorant used belongs to the same family as our double-crested cormorant, or shag, and is much like him.

migration southward from the places of summer residence on the northern coast. Once trained the birds work well from 15 to 20 years. During the winter their food taxes to the utmost the income of the owner, but during the summer they are precious and profitable hunters, or fishers, well warranting the care bestowed upon them. Mosquito nets are provided them during the summer to insure their comfort. The fishing always takes place at night by torchlight.

Four men occupy each boat. The boats go out in small fleets and drift slowly downstream; three hours' fishing is a night's work. The man at the stern does nothing but manage the craft. In the bow the master stands, wearing the peculiar hat of his rank, handling a dozen trained birds with astonishing skill and coolness. This skill has earned for the fishermen of Gifu a reputation that might be envied even on Great South bay. A fisher of



Courtesy the National Geographic Magazine

THE MASTER FISHERMAN AND HIS AIDES

Photograph by J. C. Dowding

First cousin to our double-crested cormorant, or shag, these queer looking birds of China and Japan are invaluable assistants to the fishermen, for they do most of the laborious work in connection with a prosperous and thriving industry.

The native fishermen breed their own birds as a rule. The first bird of the team or corps is caught with the use of decoys set in trees frequently by the birds and bird lime smeared upon the surrounding branches. After one bird has settled and becomes a prisoner it is placed among the bushes, decoys are removed and other birds are caught in the sticky lime. The birds taken are young, being caught in early winter on the coast on their first

the second grade is amidships, handling four birds. Between the fishers is the fourth man, called kako from the bamboo striking instrument of that name which he uses, whose sole aim is to make the noise and disturbance necessary if the birds are to be kept at work. He helps out by shouting, caring for extra apparatus and lending a hand where needed.

Each cormorant wears at the base of the neck a metal

ring drawn tight enough to prevent fish of a marketable size from being completely swallowed, but at the same time loose enough to allow the smaller fish captured to pass and feed the bird. The ring is never removed. Around the body is a cord to which is fastened at the middle of the back a short piece of stiff whalebone with which the bird is lowered into, or lifted from, the water when at work. To the whalebone a twelve-foot spruce fibre is fastened which is so lacking in pliancy as to minimize the possibility of entanglement.

The fishing ground reached, the master lowers his twelve birds one at a time into the water, gathering the reins into his left hand. The second fisher does the same with his four birds. The *kako* starts his din. The birds set to work, diving with wonderful swiftness, as fish, attracted by the torches, become plentiful.

Now is the time the master proves his skill and makes his reputation, for he is the busiest of men. His eyes must be everywhere with his hands working accordingly, adjusting the dozen strings and keeping the twelve erratic fisher-birds from entangling themselves. He must see the moment that any of the flock is gorged—a fact the bird makes known by swimming about in a foolish, helpless way with head and swollen neck erect. Discovering this, the master shortens in on the bird, lifts it aboard, forces open the bill with his left hand, still holding the eleven other lines, and squeezes out the fish with his right hand. The bird is off on a fresh hunt so quickly that the others have had no time or chance to get their reins tangled. The operation is performed with such dexterity and quickness that in a few seconds the whole team is again well in hand and at work. The operation in no way injures the birds, in fact, so accustomed to it are they, that they assist.

From four to eight marketable fish is the usual result for a single excursion of one bird—an average of about 150 fish an hour per bird, or 450 each for the three hours. Multiply this number by 16 and you have the average catch. And do not forget that fish is one of the chief staples of the Japanese.

Each bird in the team has and knows its number. A funny habit with them is the quick-witted jealousy with which they invariably insist, by all that cormorant language and pantomimic protests can do, on due observance of the recognized rights belonging to their individual numbers. Ichi, or number one, is the corps leader, the senior in years and rank. The other birds come after him in numerical order according to their ages. He is last to be put into the water and first to be taken out; the first to be fed and the last to enter the carry-baskets when the work is over. Ichi has the post of honor at "the eyes of the boat." Usually he is a solemn, grizzled old fellow, with a pompous air worthy of a victorious politician on the fifth of November. When aboard, the other birds are placed after him, by rank, alternately on either side of the gunwale. If, for instance, number three is placed in the water before number four, or number nine be placed above number seven, a family rumpus promptly results.

As each bird is taken from the water, the master can tell by its weight if it has secured enough food. If too light it is fed from the catch. The sight of the great, ungainly sea-birds, placed so exactly in the boat—shaking themselves, flapping their wings, gawing, making toilets, clearing their throats, looking about with a stupid stare and indulging in old-maidish tiffs—is quite the strangest one would wish to see.

USE OF THE RANGE EXPANDS TO MEET WAR CONDITIONS

TO MEET the war needs of the country, sheep and cattle will be grazed on the National Forests in increased numbers this year. Half a million more sheep and nearly a quarter of a million more cattle will be taken care of than last year, according to the officials of the Forest Service. This will bring the total number of stock grazed under permit to about nine million sheep, 2,360,000 head of cattle, and 51,000 swine.

This increase is on top of an increase of 200,000 sheep and 100,000 cattle made last year, when it was recognized that the country's need for beef, mutton, wool, and hides called for the fullest possible use of the National Forest ranges. Through conservative handling of these ranges for more than ten years their productiveness has been steadily rising. With the country at war, the Secretary of Agriculture felt it was necessary to take some chances of over-grazing in the interest of larger immediate production. The results of admitting a large number of livestock were, however, carefully watched. The further increases made this year are mainly made possible by finding out how additional stock can be grazed without

injury to the ranges, through more intensive methods of use.

These include readjustments in the allotments of range, closer utilization of the forage, and the opening up of country not before used for grazing stock. In order to make the new areas accessible to stock it has been in many instances necessary to construct trails or driveways. Watering facilities have also been improved. The various increased allowances have been authorized only after careful consideration.

The largest increase has been made in the Colorado and Wyoming Forests, where 51,000 additional cattle and 151,000 more sheep will be grazed. In the State of California there will be 137,000 more sheep. The provision for more cattle is widely distributed through relatively small increases on practically all of the Forests.

In Colorado virtually all of the additional sheep to be grazed are owned in small numbers by settlers of the immediate vicinity. Under present wartime conditions it is no longer necessary to handle sheep in large bands in order to make the handling profitable.

THE MAN WITH THE THOUSAND-YEAR TREE GARDEN

BY FRANK A. ARNOLD

THE man—Charles Sprague Sargent. The place—the old Bussey farm owned by Harvard University. The opportunity—a bequest of \$100,000 made by James Arnold, of New Bedford. The man, the place, and the opportunity have resulted in the Arnold Arboretum, America's famous Tree Garden and the only institution of its kind in the world.

Prof. Charles Sprague Sargent is known officially as "Arnold Professor of Arboriculture in Harvard University," and was born in Boston on April 24, 1841. He served throughout the Civil War and was brevetted Major "for faithful and meritorious services." He was professor of horticulture and director of the botanic gardens of Harvard University from 1872 to 1879.

It was in 1872 that he accepted the directorship of the Arnold Arboretum and for nearly 50 years he has devoted his undivided time and attention to its development.

"But how about the thousand years?" someone asks.

There is in existence, due to Professor Sargent's foresight, a unique contract, probably the only one of its kind in the world, entered into in 1882 between the City of Boston and the President and Fellows of Harvard University. By the terms of this contract there is deeded to the City of Boston the 220 acres of land, consisting of hill, valley and meadow, comprising the Arnold Arboretum. The City of Boston in turn leases this land to Harvard University for the nominal sum of one dollar a year for the term of 999 years, the lease to renew itself at expiration and so on from time to time forever. The only condition that the City of Boston exacted in connection with this unusual contract was that the Arboretum should never be closed to the public, and the city in turn agreed to maintain the roads and paths of the Arboretum as a part of its park system.

The romantic story of the Arboretum is not as well known as it should be. In 1868 a merchant in the City of New Bedford, James Arnold by name, died, leaving

the sum of \$100,000 for the purpose of increasing the knowledge of horticulture. His trustees eventually turned this money over to Harvard University, and after the principal and accumulated interest amounted to \$150,000 this was used as the basis of establishing a Tree Garden which should contain every form of tree, shrub, and woody plant able to stand the climate of New England.

Professor Sargent was selected to take charge of the enterprise. No more fortunate selection could have been made, for as a young man Professor Sargent had shown great fondness for horticulture and spent most of his

time in caring for the trees and shrubs on the beautiful estate in Brookline belonging to his father. Bringing to his work that enthusiasm characteristic of one who loves his profession, he literally poured out his very life and substance for the purpose of making the Arboretum the greatest Tree Garden in the world.

How well he has succeeded can best be seen by a visit to the Arboretum itself. Here one will find a valuable museum of trees and shrubs from all over the world, brought here and planted under conditions as nearly parallel to their native habitat as possible to obtain.

Explorers have been sent out from the Arboretum invading territory where the footsteps of man have never been known, and bringing back rare varieties of trees and shrubs with which to enrich this

collection. As an editor and writer Professor Sargent is known on two continents. For ten years he was editor of "Garden and Forest," the most complete magazine of its kind ever published. "The Silva of North America" may perhaps be considered his greatest achievement, being the work of a dozen years or more and representing the most complete treatise on the subject in existence. He is also author of "Woods of the United States" and "Forest Flora of Japan," "Report on the Forests of North America," and numerous other works and reports which have appeared from time to



PROFESSOR CHARLES SPRAGUE SARGENT

The man who for the past fifty years has devoted his life to the development of the greatest "Tree Garden" in the world.

time. As a student of dendrology Professor Sargent easily ranks first, for he is undoubtedly the most eminent living authority on the subject.

In appearance Professor Sargent reminds you of the rugged oak which one sees in the Arboretum, standing a little apart from its fellows, and by its strength and power commanding attention and admiration. Like all truly great men, he is simple in his tastes, kindly in spirit and while his work as a student has made him somewhat reticent, yet when once acquainted with him and the subject at hand is of mutual interest, he is a most entertaining conversationalist and the layman who is fortunate enough to be his guest literally sits at his feet drinking from the well of his wonderful knowledge.

Professor Sargent is in his seventy-sixth year, but is as hale and hearty as many a younger man and just as

full of plans for making the Arboretum larger and better as he was twenty years ago. Just now he is very much interested in securing a \$1,000,000 endowment for the institution in order that it may not be hampered in future years in carrying out its present plans, for it is well known to all that the modest sum of money which Harvard University is able to appropriate each year for the use of the Arboretum represents only a small part of the amount which is actually expended in maintaining and developing the institution. The balance has come from the many friends of Professor Sargent, who share his belief that the Arboretum represents a great asset to the entire country not only from the educational opportunity which it presents, but also from the standpoint of conservation of our forests, a subject which grows increasingly important as the years go by.

LOUISIANA FORESTRY LAW GOES INTO EFFECT

THE first meeting of the Forestry Advisory Board of the Department of Conservation, created by Act 145 of the Louisiana Legislature of 1916, was held today at the office of the Commissioner of Conservation. The personnel of the Board, as appointed by Governor Pleasant early in March is as follows: G. S. Clark, general manager of the Tremont Lumber Company of Rochelle, and S. T. Woodring, Manager of the Calcasieu Longleaf Lumber Company of Lake Charles, representing the lumbermen of Louisiana; J. H. Cockerham of Luella, representing the agricultural interests; Professor of Forestry J. G. Lee of the Louisiana State University, and M. L. Alexander, Commissioner of Conservation, ex-officio chairman of the Board.

The Forestry Advisory Board will direct the expenditure for forestry purposes of one-fifth of the Severance Tax on timber and turpentine, which by the law of 1916 becomes available for this use from Jan. 1, 1918. Contrary to a widespread belief among the lumbermen of Louisiana, no portion of the severance tax on timber has ever been placed in the hands of the Department of Conservation for forestry purposes. The framers of the tax law in 1910 intended that it should, but subsequent legislation diverted the entire tax into the general fund of the state.

Messrs. Alexander, Lee and Woodring attended the meeting on the 9th. The first act of the Board was to confirm the appointment of R. D. Forbes as state forester, with the title of Superintendent of Forestry, to direct the actual forestry work in the state. Mr. Forbes had held this position since last October having been appointed by Commissioner Alexander, in advance of the operation of the 1916 law. That law required that the forestry work be superintended by a technically trained

forester of two years' experience. The present appointee is a graduate of the Yale Forest School in 1913, and has since been employed by the United States Forest Service and the forest commission of the State of New Jersey.

The Board approved an expenditure of \$3,000.00 up to July 1st, when it meets again. \$1,000.00 of this is supplied by the United States Government for fire patrol under the Weeks law, contingent upon a like expenditure by the state.

Appropriations were made for a special bulletin on forest fires and for fire posters of popular form. The State Forester was directed to give his special attention to the fire problem, as the most vital forestry work now before the state. The Board was strongly of the opinion that the forestry department could make the greatest return to the lumbermen of the state by pushing forest fire protection, and would also promote the grazing interests and cut-over land utilization, by the same means.

Second only to fire protection in the opinion of the Forestry Board was the work of land classification and the Board directed that arrangements be made with the agricultural and grazing authorities of the state, who have already informally offered their co-operation, to make joint examinations with the State Forester of timbered or cut-over tracts. These tracts, owned by individuals or corporations, shall be classified upon examination into agricultural, grazing and forest land, with an eye to their systematic development.

Appropriations were also made for investigations along various lines, including a careful study of the rate of growth of Louisiana timber trees, notably the pines, and studies of the various problems connected with fire damage and control.

FREE use of dead wood for fuel has been granted the residents of Flagstaff, Arizona. This brings the policy for the Coconino Forest in line with that adopted on the Santa Fe and Carson where the use of green timber is prohibited under free use, but dead wood may be taken without permits by residents of Santa Fe and Taos.

STANLEY AUGSPURGER, whose name is carried on the Honor Roll of the Roster of Foresters regularly published in this magazine, and who was on the Tuscania when she was torpedoed, has the honor and distinction of being the first Michigan forester, as well as the first Michigan man to lose his life in this war for the freedom and democracy of the world.

THE ROSELLE PLANT

BY H. E. ZIMMERMAN

FRUITS and economic plants indigenous to the tropics are now as never before attracting the attention of the people of the United States. The Roselle plant, introduced by Dr. Harvey Wiley in 1908, has recently become of great interest. In the Gulf States and the West Indies it is known as "Jamaica Sorrell," and it has suddenly acquired a high commercial value in the Philippines, Hawaii, and other Pacific islands.

The Roselle plant is an annual, 5 to 7 feet in height, and branches profusely. It is cultivated much like corn, yielding from 1,800 to 2,000 blossoms on a bush, and when in bloom resembles a rose bush and presents a very beautiful sight. It is probably the only plant in cultivation in which the part utilized for food is the calyx. This calyx possesses excellent qualities for the



ANOTHER USEFUL MEMBER OF THE PLANT ARMY

Combining beauty and utility the Roselle plant offers a resource of much value, and its cultivation may be an important factor in the campaign for food production.

manufacture of jelly and allied products. One Chicago firm uses from \$50,000 to \$100,000 worth every year. Preparations made from it closely resemble in color and flavor those made from the cranberry. In three weeks from the time of blooming, which occurs in October, the calyxes are large enough to be picked, and make a jelly of lighter red color than if allowed to mature. This fruit is also used in making sauce, jam, flavoring extracts for soda water fountains, and also for coloring jellies, jams, or similar products as a substitute for coal-tar dyes where a bright red color is desired.

To prepare for cooking, the fruit pod is taken between the thumb and forefinger of the left hand, stem end up, cutting off the stem and basal end of the calyx where the seed pod is united with the calyx, when, with a slight pressure of the fingers holding the pod, the seed pod will be forced out.

In India this plant is grown for its fiber, which is used in the manufacture of cordage and coarser textile products. In that country the leaves are sometimes used as a salad and the seeds are supposed to have medicinal properties. They are also fed to cattle and poultry.

NEW YORK STATE ENCOURAGES PLANTING

YOUNG trees at a special price of fifty cents per thousand have been offered by the Conservation Commission to cities and villages that will use them for reforesting purposes. This price covers only the cost of packing, says Commissioner George D. Pratt in a letter sent to the mayor or president of every city and village in the state, and is made in order to afford an unusual opportunity to plant city or village lands, or lands owned in connection with city or village water supply.

"Cheap and unprofitable land, such as may be found in the vicinity of almost any city or village," writes Commissioner Pratt, "might well be converted into communal forests by being planted at once with suitable young trees and developed by the municipality. Such forests throughout the state would in the future provide an abundant supply of lumber and fuel for the communities that maintain them.

"If your city or village has never planted trees before, I would urge that you make a beginning this year. It is a comparatively easy matter to plant several thousand trees, as two men can plant a thousand trees in a day. One thousand trees will re-forest an acre. Over thirty of the cities and villages in the state are now planting trees and some of these have planted very extensively. In some cases, school children have done reforesting work as part of their Arbor Day exercises."

The price of the trees which the state is offering to municipalities at fifty cents per thousand would, if sold to private applicants, be charged at \$4 per thousand, according to the Forestry Division of the Conservation Commission, which has charge of distributing each spring the ten million young trees which the state raises annually in its five nurseries. Even the \$4 price covers only the actual cost of raising the trees, as the state asks no profit.

THE short course for forest ranger students closed at the State University of Montana at the end of March. Most of the students in the course returned to their ranger districts in the National Forest with the opening of spring.

RECENT examination of a nine-year-old forest plantation near Syracuse by College of Forestry men brought to light a number of specimens 30 feet tall and 8 inches in diameter on the stump.

RESTORING A COLONIAL HOUSE

BY RAWSON W. HADDON

MR. HERBERT M. BAER'S house at Westport, Connecticut, is chosen for illustration at just this time for a number of interesting reasons in addition to its interest as a successful restoration of a pre-Revolutionary farmhouse.

In the December Number of *AMERICAN FORESTRY* were some notes on the use of wood in fireplaces for heating as a means of saving coal for use in the various "necessary industries." In the present instance, in addition to its charm as an example of unusually good architecture and in addition to its interest as showing us what an architect chooses in the construction and design of his own residence, Mr. Baer's house is a building that suggests some serious thoughts upon the use of wood as a building material—thoughts, it might be better to say, upon how we may conserve our forests by the proper use of them.

What I hope to illustrate to you—with the help of this ancient house—is that just in the same way that wood can be used in fireplaces to save coal so, as Mr. Baer's house suggests, can wood be used as a means of saving steel and iron and concrete for those same industries without sacrificing in any way the stability and structural integrity of the house. And indeed, if we follow the question to a logical—though rather paradoxical conclusion—it would appear that when we once establish the fact in our minds that coal and steel must be saved it will be evident also that an unusual demand for wood must be the result of our economy in the use of the other materials.

And in order to meet this demand (keeping to our logical conclusion, again) the utmost economy in the use of wood must be exercised. Now comes the point of the discussion, and the one that Mr. Baer's house illustrates, which is that the most satisfactory way of saving wood is

by using it—but by using it in the proper way.

Lumber, that is the tree in its growing state when it is simply the promise of material that can be secured from it, is one of the most important natural resources of our country which can be put to good and successful commercial use.

"Yes," say those persons whose interests lead them to advise other materials for building, "but lumber is an

extravagant building material. It is not substantial, and the life of a frame house is a short one." If poorly built it is true that a frame house will not last many years. The same thing, however, is true in the use of other materials.

The question to be answered, though, is whether it is economical or extravagant to build of wood. And the best answer is to point to the fact that

Mr. Baer's house was built about 1760—more than a century and a half ago. One hundred and fifty-eight years to be exact. Grandfathers and great grandfathers; children, grandchildren and great-grandchildren have lived in it, and still it is strong and sound and, structurally, in so good and safe a state of preservation that an architect—a man whose daily work consists in the task of demanding and superintending safe, sturdy and good construction, found the house in spite of many years of neglect and lack of repair in such good structural condition as to be worthy of restoration for his own use.

So this house does not prove that wood is a flimsy or unsubstantial building material. What it does prove, instead, is that with proper attention to structural requirements, wood is as safe and sound, and from the point of view of the period of life that may be expected of the house, as satisfactory a material as can be found. A life of one hundred and fifty-eight years with expectations of as many to come can surely not be called unsubstantial or short.



THE HOUSE

The fine old trees give an air of intimacy and add greatly to the indescribable charm of the place.



THE DINING ROOM

Beautiful in its simplicity and filled with the charm of atmosphere, accentuated by the old fireplace and oven seen on the extreme left.

Brick?—Concrete?—well, yes. But will it be as homelike as wood. This is an important question. Will it "fit" as well into the landscape as this frame house does? Will it be as economical in final upkeep as the frame house and will the brick or concrete house, in spite of their substantially greater cost, last any longer, or as long as this bright homelike house nestled down among century old trees. And there are thousands of other examples of wooden houses that were built by our forefathers which are, today, in quite as good condition as this one.

It is a fact, and one well worth our attention, that practically all the famous American houses covering the wide range from stately Mount Vernon to Lincoln's log cabin house have been wooden buildings. And the oldest houses of all, the Fairbanks house in Dedham, Massachusetts, built in 1636; the Paul Revere house in Boston, the splendid old Longfellow house in Cambridge, as well as the old Schenk-Crook house in New York City (built in 1656) are all built of that—as we are asked to believe — short-lived and flimsy material, wood.

So, when you build your house, and select wood or when your architect advises wood as the most sympathetic material, you need not worry about the alleged unsubstantial qualities of it. You need not be afraid that not so many years after it is finished it may be necessary for your son or your daughter to have the house torn down and a more substantial one built in its place.

You need not think that wood is an extravagant material that will last "but a generation," but you all remember those ancient houses that I have mentioned—including Mr. Baer's—and you will know that your own frame house, if it is properly constructed, will last for three or four or even five generations and that it will be as good and sound in the end as it was on the day the builders left it new and ready for the first occupants.

Mr. Baer is an architect who has designed some of the most important buildings in New York City and his house at Westport is the latest addition to the long list of Colonial houses that are owned by architects

and which have been restored for their own use.

In this particular instance the house was, before its restoration, just the sort of place to attract the interest of an architect and it offered him an opportunity for exciting research and discovery. Interest in the house itself, after its unusually favorable location in one of the most picturesque of old Connecticut towns is taken into consideration, was by no means aroused by conditions of nearness to the original colonial layout or design.

For, during many generations during which the house had been in the possession of farmer-owners, the building had been changed and altered and added to so largely and so frequently that little except the main outlines of the original structure remained. Even these had been interfered with by many additions and changes, while in

the interior so many old partitions had been removed and new ones added that it took all the knowledge gained in studying dozens of old houses of the same original type to bring the place back to anything like its original character and feeling.

This, like all restorations of early houses, was not a matter for careless or half-interested consideration. It was evident at the very outset that the problem was to be one of removing new or comparatively new additions and by scraping to the very core of the house, to determine just what had been originally built, and then to make restorations accordingly.

Problems in restoration are further complicated by the fact that most colonial houses as originally built are not so arranged as to be at all fitted for present day modes of living.

To cite a single instance of this, the placement of the kitchen in the original

plan, with its close communication to all the rooms on the first floor, was a good and practical arrangement at a time when the farmer, his family and the farm help used the kitchen as a dining and living room as well, but it is not a satisfactory arrangement at the present time and under the changed social conditions that exist today.

Supposing you were to purchase a Revolutionary farm house (one that Washington had stopped at, perhaps) or, if you were fortunate enough to inherit one that had



THE NEW FRONT DOOR

A skillful bit of design, redolent of the atmosphere of Colonial days. It replaces an ugly porch which had been added during the Civil War.

been built by an ancestor of yours who fought in Revolutionary wars, you would see at a very early stage of your restoration of the building that the work must be carried out along two distinct lines. It is desirable in the first place to restore literally wherever possible and in the second place where such literal restoration is not



OPPOSITE THE FIREPLACE IN THE LIVING ROOM

A view of the fireplace side of this room was printed in the December issue of this magazine.

possible owing to the necessity of enlarged and rearranged rooms, the general character and atmosphere of colonial work must be secured by careful reproductions of old work or by the still more troublesome expedient of finding in old houses or in antique shops, material of the period of the house which can be fitted into it.

This latter course was adopted in Mr. Baer's house in the instance of the living room paneling but to find a suitable door frame being quite impossible, the present front door was designed to take the place of a porch and doorway that had evidently been added in the middle of the last century.

In its present condition—as it is today—the house is much larger than when originally built. The extension which is seen in the photograph on the left of the house was added by Mr. Baer. It is true that some visitors have thought the extension an older building than the main house, but this appearance of age was secured through the careful use of and the exact knowledge of the details and the structural appearance of the colonial style.

Not a little of this appearance of consistency in style and period was secured by the proper use of building materials. The exterior walls are covered with hand-riven cypress shingles which are 24 inches long, of which 10 inches are exposed to the weather. It is intended, of course, that this extension will last as long as the main part of the house and in order that these shingles may be preserved in good condition and act as a permanent protection for the structural parts beneath, they were dipped in white lead and oil before they were nailed to the walls and given final coats of paint after laying.

The roof is also covered with cypress shingles, of which five inches are exposed, and these were dipped in shingle stain before being put on the roof.

Exteriorly in all respects the old, new and restored parts of the house follow the general tendencies of colonial work that are familiar to all students of the period.

The colonial designer knew well how to design his house and get his formal and dignified effects with no loss of "homelikeness" and he did it with an economy of effort and of material that most modern architects find easier to admire than to reproduce.

And much modern colonial work lacks these convincing qualities of dignity and homelikeness because the designer of the present day in studying the details of the style has in many cases entirely lost sight of the fundamental principles of good design and thorough, conscientious construction upon which the original makers of the period lavished their best thought and care.

The colonial house was seldom the highly ornamented structure with exaggerated emphasis upon a few well known but by no means typical details that now pass as representative of the style as a whole.

In the present instance the temptation to use elaborate detail and to tack on "ornamental" porches and the use of distinctly non-colonial shutters has been avoided, and the result, instead of lacking atmosphere, gains very largely by this restraint.

On the whole, when all is said and done, the house resolves itself in one's mind as one of those pleasant places where good restrained design takes the place of the particular brands of ostentatious display that are so



A CORNER OF THE LIBRARY

The panelling in the library was found in a room on the second floor, under many coats of plaster, paper and paint and was reset in this room.

popular at the present day. It is the sort of house that the ignorant designer sees, admires, and attempts to reproduce "with improvements in the design, of course," with the usual, inevitable failure.

It may be, perhaps, that all this care and study came about because the architect is the owner and occupant of the house. There always is an interest in "the archi-

tect's own house" simply as such, just as there is in an artist's own portrait of himself, because in it we see, or imagine we do, the ideals in architecture and in art which that particular artist holds most worth working for. In his work for a client many distracting considerations interrupt the architect's arrival at a goal toward which he plans to arrive, but in his own house he has the opportunity to do whatever he can to accomplish the ends that are most interesting to him and in which he finds the greatest satisfaction and happiness.

In the instance of Mr. Baer's house, the result is most satisfactory from the point of view of a study in archaeological reconstruction as well as from the more practical viewpoint of the man looking for good comfortable and substantial design in domestic architecture. As proof of this, it must be evident to you that even if your interests are not in historical styles of architecture, and even (in the extreme case) if good architecture of any kind fails to interest you in the

least, Mr. Baer's house will still be of interest as an illustration of how economical and trustworthy and permanent a material wood is when properly selected.

To the architect the photographs would speak for themselves, but for the house-builder the following will be of interest as a reminder and a guide:

Birch—Stair treads, handrail of stairs.

Cypress—Roof and wall shingles and all exterior work except as otherwise mentioned.

North Carolina Pine—Under flooring.

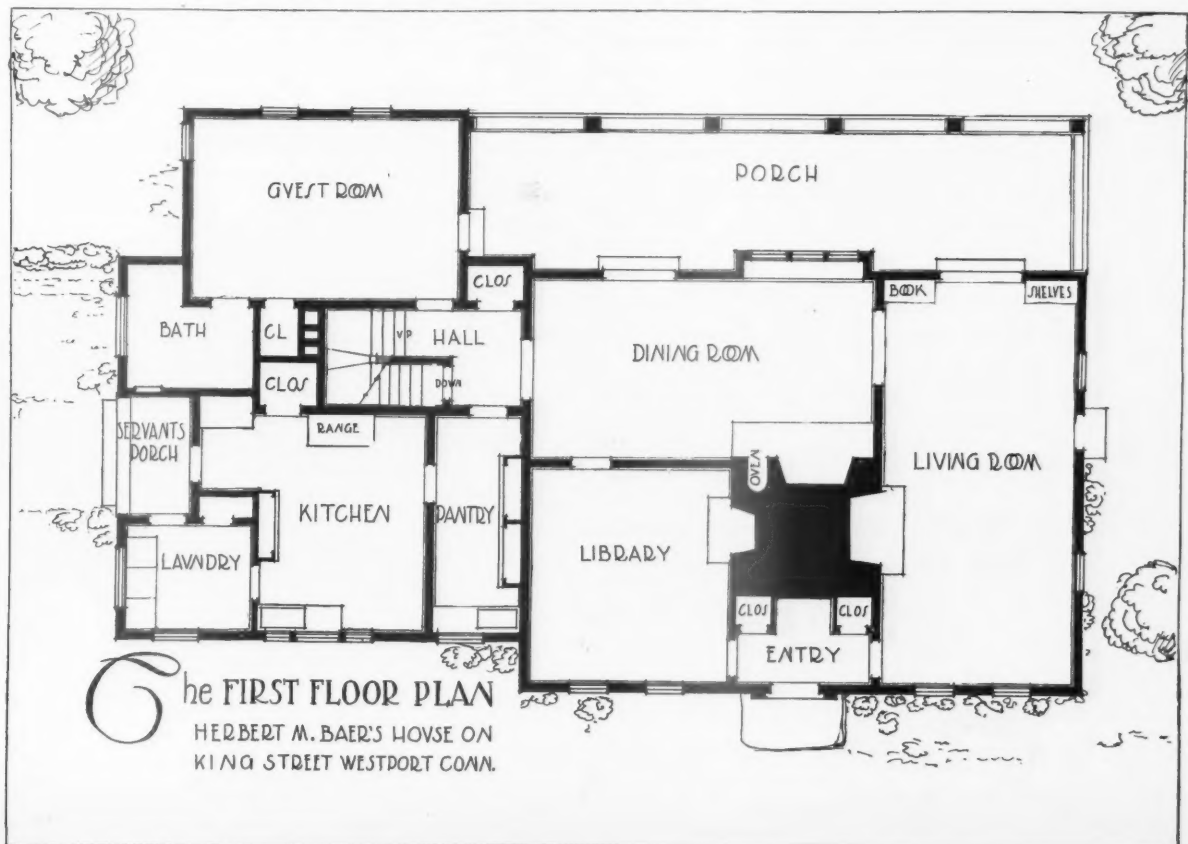
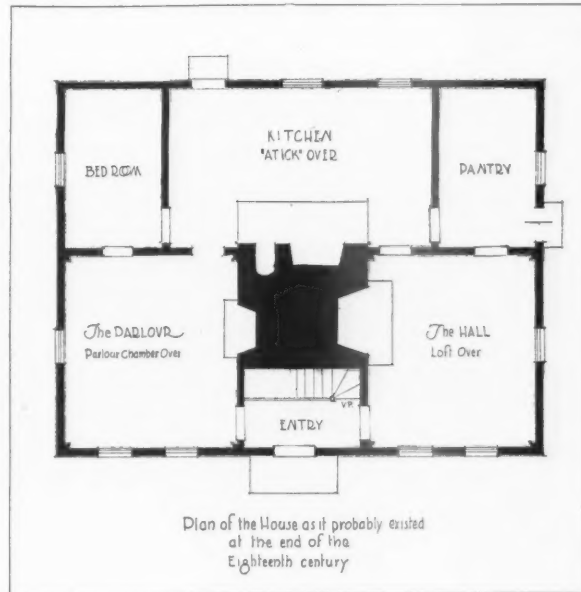
White Pine—Casement window frames, door frames, porch columns, window sash, shutters, interior doors.

Spruce—Framing, beams, studs, etc.

Whitewood—Stair risers, balusters.

In addition to this it may be well to add that some old

paneling that was found in the second floor of the house under many coats of plaster, wall paper and paint, is white pine and that the old clapboarding on the house is cypress.



DONATIONS

FOR THE

RELIEF AND COMFORT

OF THE

FOREST REGIMENTS

The American foresters who are doing such valiant work in France deserve the hearty support of their friends back home—the members of the American Forestry Association and all others interested in the subject of forestry.

To these men, the members of the Forest Regiments, has been assigned the important task of supplying for the use of the American army the fighting forces of the Allies the timber needed for construction work in trenches, bridges, railroad ties, boards, for hospitals and billets, planks to haul ordnance over and many other uses. The fact that this calls for at least 25,000,000 board feet monthly shows the immensity of the task which the Forest Regiments from the United States are performing. Lack of water transportation makes the French forests the only available source at present for these supplies. The French, however, desire to have the forests which they are sacrificing for this purpose cut as far as possible along scientific forestry lines.

To solicit and take charge of the funds raised for the comfort and relief of the American foresters, there has been organized a joint committee of the lumbermen and forestry organizations throughout the country. The immediate need of the fund is to provide comfort and recreation essential to the physical and moral welfare of the men; and later on consideration will be given to relief for soldiers and their dependents. The members of the American Forestry Association are asked to contribute generously to take care of the immediate needs. Reports of the use to be made of the contributions will be published from time to time in all the forestry and lumber journals.

The appeal of the Association is: **Stand behind the men of the Forest Regiments, who are furnishing the material which, next to ammunition and food, is the greatest need of the allied armies.**

Send your contribution to Mr. P. S. Ridsdale, secretary of the American Forestry Association, 1410 H Street, N. W., Washington, D. C.

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AMERICAN FORESTERS IN MILITARY SERVICE

This list is compiled from various sources. Every effort has been made to make it complete and accurate, but in the nature of things there are necessarily omissions and errors. The list will be reprinted and increased from month to month. All foresters and others who can supply additional names, report casualties, or note corrections are urged to communicate with American Forestry as promptly as possible, to the end that the list may have full value as a record of the men who have gone to war.

AGEE, Fred B., 1st Lt., Engr. Corps (For.); U. S. R., A. E. F., P. O. 702, via N. Y., deputy forest supervisor, U. S. F. S.
 Adams, George (Ohio State Univ.), 10th Eng. (For.).
 Albano, Jack, forest ranger, U. S. F. S.
 Alden, Phil. E. (Mich. Ag. Col., '18), 10th Eng. (For.). A. E. F.
 Aldous, Tura M., grazing, U. S. F. S.
 Aldsworth, Donald (Univ. of Minn., '14), Off. Tr. Camp, Presidio, Cal., San Diego, Cal.
 Alexander, Ben. (Bilt. For. School), 2nd R. O. T. C.
 Alexander, J. B., 1st Lt. Aviation Corps (Univ. of Wash., '17).
 Allen, Raymond, New Jersey.
 Amen, Albert, 6th Bn., 20th Eng. (For.), fire guard, U. S. F. S.
 Ames, F. E. (Yale For. School, '06), Capt., Co. B, 7th Bn., 20th Eng. (For.). U. S. F. S.
 Anderson, A. C., 2nd Lt. U. S. A., Ft. Leavenworth, Kan. (Univ. of Wash., '17).
 Anderson, Albert T. (Ore. Ag. Sch. For.), 2nd Lt., National Army.
 Anderson, Emil A., deputy forest supervisor, U. S. F. S.
 Anderson, Parker O. (Univ. of Minnesota, '10), 10th U. S. Eng., France, U. S. F. S.
 Andrews, A. K. (Ore. Ag. Sch. For.), Sgt., 116th Eng.
 Archer, Frank L., Engr. Headquarters, France, forest clerk, U. S. F. S.
 Archibald, H. (Ore. Ag. Sch. For.), Sgt., 116th Eng.
 Armstrong, Carroll W. (Bilt. For. School), Quartermaster's Dept., Fort Dodge.
 Armstrong, Ralph H. (Bilt. For. School), 14th Inf., Expeditionary Forces, France.
 Atkinson, E. S. (Yale For. School, '16, and Biltmore), 2d Lt., Ft. Grant, Canal Zone.
 Atwood, C. R. (Univ. of Maine, '15), manager, Unit 1, New England Sawmill Units.
 Aylward, F. N. (Univ. of Calif.), Amb. Corps.

BACKUS, Romyne L. (Univ. of Minn., '18), 20th U. S. Eng., U. S. F. S.
 Badertscher, Ed., temp. clerk, U. S. F. S.
 Baker, Hugh P. (Yale For. School, '04), Capt., 46th U. S. Inf., Camp Taylor, Louisville, Ky., Dean N. Y. State Col. of Forestry.
 Balden, Max B., clerk, U. S. F. S.
 Baldersee, E. W. (Ore. Ag. Sch. For.), Corp., 116th Eng., A. E. F.
 Baldwin, H. C. (Penn. State, '14).
 Ballew, William Murray (Yale, '15), 5th Bn., 20th Eng. (For.). A. E. F.
 Balmer, Joseph D. (Univ. of Wash., '18), Sgt. Bat. D, 346th Fld. Art., American Lake Encampment.
 Ballard, Dean (Univ. of Wash., '12), American Lake Encampment.
 Ballou, F. C. (Penn. State, '10), 20th Eng. (For.), 3rd Bn., Co. C.
 Bannister, Fred, 20th Eng. (For.), fire guard, U. S. F. S.
 Bar, Warren, 20th Eng. (For.), fire guard, U. S. F. S.
 Barbur, Hal (Ore. Ag. Sch. For.), 1st Lt.
 Barker, S. Omar, Co. D, 502nd Service Bn., Camp Merritt, N. J., U. S. F. S.
 Barlow, Harold (Yale For. School, '14), 1st Lt., Ordnance, Coe Brass Bldg., Ansonia, Conn.
 Barnett, William L. E. (Yale, '15), Section Sanitaire, U. 70, Convois Automobiles, par B. C. M., Paris, France.
 Barr, John B., forest ranger, U. S. F. S.
 Barton, Robert M., 20th Eng. (Forest), Amer. Univ., Wash., D. C.; forest ranger, U. S. F. S.
 Bastian, Clyde E., Corp. 20th Eng. (For.), Univ. of Mich., '10). A. E. F.
 Batten, R. W. (Yale For. School, '10), 10th Eng. (For.). A. E. F.
 Bay, Helmut (Mont. For. School), 20th Engineers.
 Beal, Cecil R. (Univ. of Wash., '17), 2nd Lt. 20th Eng. (For.), American Univ., Washington, D. C.
 Beals, James B., 20th Eng. (For.), forest ranger, U. S. F. S.
 Beam, Donald (Iowa State Col. ex, '20), C. A. C., 1st Co., Ft. De Bussey, Honolulu, Hawaii.
 Beaman, Clarence W., messenger, U. S. F. S.
 Beaman, La Vaughn, Co. A, 5th Bn., 20th Eng. (For.). U. S. F. S.
 Beatty, Homer Milo (Mich. Univ., '13), Sgt. 10th Eng. (For.). A. E. F.
 Bedwell, Jesse L., forest ranger, U. S. F. S.
 Beebe, C. (Mont. For. School), 20th Engineers.
 Behre, C. Edward (Yale, '17), Co. F, 4th Bn., 20th Eng. (For.). A. E. F. U. S. F. S.
 Bell, Ernest (Univ. of Minn., '10), Lt. Rainbow Div., Camp Mills, N. Y.
 Bell, George R. (Yale For. School, '18), 2nd Lt., 12th Fld. Art., A. E. F.
 Bellue, A. (Student Univ. of Cal.), 10th Eng. (For.).
 Beltz, H. C., 1st Lt. (Mich. Ag. Col., '18).

THE ROLL OF HONOR

IN THIS ROLL OF HONOR WE WILL PUBLISH EACH MONTH AS THEY ARE RECEIVED OR REPORTED TO US, THE NAMES OF FORESTERS WHO MEET DEATH IN SERVICE.

AUGSPURGER, STANLEY R., Dayton, Ohio. (Univ. of Mich., '17). Field assistant, U. S. F. S., District 6. Enlisted Dec. 7, 1917; was assigned to Co. D, 6th Battalion, 20th Engineers (Forest), and was lost February 2, 1918, from the transport *Tuscania*. His body was recovered, identified and buried on the Scotch coast.

MUNCASTER, ROY (Univ. of Wash., '17), Ranger, U. S. F. S., Olympic National Forest. Enlisted in December, 1917; was assigned to the 20th Engineers (Forest), and was lost from the *Tuscania*. He is reported by the War Department as among the missing or the unidentified dead.

REES, H. S. (Univ. of Wash., '14), Canadian Contingent, killed in battle in France.

REES, L. A. (Univ. of Wash., '14), Canadian Contingent, killed in battle in France.

SHARP, MILTON K. (Univ. of Ohio, '16), Bat. A, 134th Field Art., killed December 5, 1917, Montgomery, Ala.

SIMPSON, C. E. (Penn. State Col., '16), 10th Eng. (For.), died in Scotland October 3, 1917.

SMITH, A. OAKLEY (Yale For. School, '14), killed while training for aviation, drowning in Delaware River by fall July 21, 1917.

YOUNG, DOUGLAS E., private English Army, killed in France April 10, 1917, was State Forest Warden, Maryland.

Benedict, M. S., 1st Lt. 10th Eng. (For.); forest supervisor, U. S. F. S.
 Benedict, Raymond E., Major 10th Eng. (For.), For. Br. B. C.
 Bennett, Edwin L., Co. H 157th Inf., Camp Kearney, Cal., forest ranger, U. S. F. S.
 Bennett, Harry C., forest ranger, U. S. F. S.
 Bennett, William W. (Univ. of Nebr., '12), Co. E, 314th Ammunition Train, Camp Funston;
 Fort Riley, Kansas, dep. for, sup., U. S. F. S.
 Benson, A. G., 3rd R. O. T. C., forest examiner, U. S. F. S.
 Bentley, George A., Capt. Quartermaster's Dept., purchasing agent U. S. F. S.
 Bernhardt, Carl L. (Univ. of Wash., '18).
 Berry, John K., scaler, U. S. F. S.
 Berry, Swift, forester, U. S. F. S.
 Betts, E. G. (Iowa State Col. ex, '15), 1st Lt., 20th Eng. (For.), Camp American Univ., Wash., D. C.
 Betts, Floyd, Co. D 2nd Bn., 20th Eng. (For.). A. E. F., field asst., U. S. F. S.
 Betts, Fred H., forest ranger, U. S. F. S.
 Bevan, Arthur (Univ. of Wash., '17); Canadian Eng., France.
 Bevan, Jesse T., Co. E, 10th Eng. (For.), A. E. F., France, U. S. F. S.
 Beyers, Walter F. (Univ. of Minn., '12), Capt., Camp Dodge, Iowa.
 Billin, R. T. (Penn. State, '20), 10th Eng. (For.).
 Billings, R. W. (Mich. Ag. Col., '17), 10th Eng. (Forest).
 Billingslea, James H., Jr. (Univ. of Wash., '11), Top Sgt., 10th Eng. (For.), forest ranger, U. S. F. S.
 Bird, R. G., Corp. 20th Eng. (For.); (Cornell, '16).
 Bird, Vern A. (Univ. of Minn. and Utah), 20th Eng. (For.), forest ranger, U. S. F. S.
 Black, John J., Naval Res. draftsman, U. S. F. S.
 Blair, Albert W., 20th Eng. (For.), forest ranger, U. S. F. S.
 Blair, Earl M. (student Univ. of Cal.), 20th Eng. (For.).
 Blake, Philip (Univ. of Minn., '10), Marine Barracks, Quantico, Va.
 Bliss, James (Ohio State Univ., '14), Capt., Chilli-cothe, Ohio.

Bloom, Adolph, Ensign U. S. N. Train. Sta. (Univ. of Wash., '10).
 Blouse, Joseph R. (Mt. Alto, '16), Pa. Dept. For.
 Bodine, R. C. (Ore. Ag. Sch. For.), Co. B, 20th Eng. (For.).
 Boisen; Rev. Anton T. (Yale, '05), Secretary, Y. M. C. A., 31 Ave., Montaigne, Paris, France.
 Bonner, James H., Capt., 1st Co., E. O. T. C., Camp Lee, Petersburg, Va., acting dean Mont. For. School.
 Bonney, Parker S., sub. It., Br. Navy (Univ. of Wash., '13).
 Booy, Henri (Minn. For. Sch.), 10th Eng. (For.). A. E. F.
 Bosworth, James H. (Univ. of Mont.), 20th Eng. (For.), Amer. Univ., Wash., D. C., U. S. F. S.
 Bothfield, Harry, Julius (Yale, '12), Corp., 302nd Inf., Co. H, Camp Devens, Mass.
 Bowen, James H., 20th Eng. (For.), forest ranger, U. S. F. S.
 Bowen, John S., 20th Engineers (Forest), Amer. Univ., Wash., D. C., U. S. F. S.
 Bowen, Jos. B. (Yale For. School, '17), Royal Flying Corps, Camp Everman, Field 2, Fort Worth, Texas.
 Boyce, W. H. (Penn. State, '17), Timber inspector, 814th Depot Aero Squadron, New York.
 Bracy, Elbridge J., Co. B, 3rd Bn., 20th Eng. (For.). A. E. F., fire guard, U. S. F. S.
 Bradley, Tom O. (Student Mt. Alto), 3rd Bn., 20th Eng. (For.). A. E. F., Pa. Dept. For.
 Brady, Charles C. (Univ. of Wash., '18); Battery A, Wash. Signal Corps.
 Brady, Seth C., messenger, U. S. F. S.
 Brayton, Shirley (Univ. of Minn., '18), 20th U. S. Eng., A. E. F.
 Breneman, Howard E. (Mt. Alto, '17), Co. C, 1st Bn., 10th Eng. (For.). A. E. F., Pa. Dept. For.
 Brett, H. (Ore. Ag. Sch. For.), Capt., 20th Inf., A. E. F.
 Brewster, Donald R., forest examiner, U. S. F. S.
 Brinkerhoff, H. E., 1st Lt. Inf.
 Brindley, Ralph, 2d Lt., Bat. C, 346th F. Art., R. O. T. C. (Univ. of Wash., '17), American Lake Encampment.
 Brockway, M. (Univ. of Me., '15), checker, Ten Saw Mill Units.
 Broderick, Martin J. (Univ. of Minn., '16), 1st Sgt., U. S. Engr., Co. C, 501 Bn., Engr., 20th Eng., A. E. F.
 Brooks, James F. (Montana For. School, '17), 10th Eng. (For.), forest ranger, U. S. F. S.
 Brown, Bascom H., forest ranger, U. S. F. S.
 Brown, Harold B., 20th Eng. (For.), forest ranger, U. S. F. S.
 Brown, R. A., Co. D, 23rd Eng. (Highway), Camp Meade, Md., U. S. F. S.
 Brown, Thomas (Univ. of Minn.), Marines, A. E. F., France.
 Brown, Robert C., asst. forest ranger, U. S. F. S.
 Brown, V. S. (Univ. of Cal., '14), 10th Eng. (For.).
 Brown, Vance, scaler (Univ. of Wash., '17), Bat. A, Wash. Sig. Corps, U. S. F. S.
 Browning, Harold A., Signal Corps, Co. A, Ft. Severns, Ga., forest ranger, U. S. F. S.
 Broxon, Donald (Univ. of Wash., '14).
 Bruce, Donald (Yale For. School, '10), Capt., 10th Eng. (For.), assigned in charge of timber reconnaissance in France. (Prof. of For. Univ. of Cal.).
 Bruce, James, U. S. F. S.
 Brundage, Marsden R. (Mich. Ag. Col., '17), 20th Eng. (Forest).
 Bryant, Edward S., Capt. 10th Eng. (Forest), for. inspector, U. S. F. S.
 Buch, John Edward (Mt. Alto For. Acad., '17), Co. C, 1st Bn., 10th Eng. (For.), Pa. Dept. For.
 Buck, Shirley, Capt. Camp Joseph E. Johnson, Jacksonville, Fla. National forest inspector, U. S. F. S.
 Budelier, C. J. (Ore. Ag. For. Sch.), 2nd Lt., 347th Light Fld. Art.
 Buhler, Ernest (Univ. of Minn., '13), Sgt., O. T. C., Camp Dodge, Ia.
 Bullard, Herbert (N. Y. S. Col. For. '17), spruce Reg., Vancouver Bar, Wn.
 Bullerdick, Ray O., Sgt., Supply Office, Camp Talliaferro, No. 1, Fort Worth, Tex. (Asst. Forest Ranger, U. S. F. S.).
 Bunker, rage, city forester, Fitchburg.
 Buol, E. M. (Ore. Ag. Sch. For.), Corp., 20th Eng., Co. D.
 Burgess, John, Corp. 66th Co., 164th Depot Brigade, Camp Funston, Kan., surveyor draftsman, U. S. F. S.
 Burleigh, T. D. (Penn. State, '18), 20th Eng. (Forest).
 Burnham, Carl F. (Univ. of Wis., '14), 1st Lt., U. S. Army.
 Burnham, Roland P. (Univ. of Wash., '17); 2nd R. O. T. C., Presidio, San Francisco, Cal., U. S. F. S.
 Burrall, Harrison D. (Yale, '07), 29th Eng., Camp Ayer, Mass., forest examiner, U. S. F. S.

Burt, E. H., Lt. (Mich. Ag. Col., '14).
Buttrick, P. L., Lt. Am. Amb. Serv. (Yale For. School, '14).
Byrne, Geo. J., Jr. (Univ. of Cal.); Amb. Corps.

CALKINS, Hugh G. (Yale For. School, '09), 2nd Lt., F. A. N. A., 166th Depot Brigade, Camp Lewis, Amer. Lake, Wash., forest supervisor, U. S. F. S.
Calloway, G. A. (Univ. of Mo.); 10th Eng. (For.).
Calloway, Joseph R., forest ranger, U. S. F. S.
Calvert, Gerald F. (Univ. of Wash.); Canadian Contingent in France.
Cameron, J. F. (Univ. of Wash., '19); Av. Training Camp, San Diego, Cal.
Campbell, J. (Ore. Ag. Sch. For.), Medical Dept., 13th Inf.
Campbell, John W. (Biltmore), 2nd Lt., Bat. C, 330th F. A.
Campbell, Tom (Ore. Ag. Sch. For.), U. S. S. Northern Pacific.
Cappel, Frederick, for. clk., U. S. F. S.
Carney, Thomas (Mont. For. School), 20th Engineers.
Carpenter, Herbert M. (Bilt. For. School), 20th Eng. (Forest).
Carvey, Matthew (Ohio State Univ.), Aviation.
Carey, N. Leroy (Univ. of Mich., '16), 405 Squad. A. S. S. C., North Cantonment, Vancouver, Wash., Forest assist., U. S. F. S.
Cassidy, Hugh O. (Iowa State, '10), 10th Eng. (For.), A. E. F., forest ranger, U. S. F. S.
Cecil, Kirk P. (Kan. Ag. Col., '07), Lt. Coast Art., Ft. Stevens, surveyor, U. S. F. S.
Chamberlain, Harry (Penn. State, '14), 20th Eng. (Forest).
Chamberlain, W. J. (Ore. Ag. Sch. For.), 1st Lt., Aviation, A. S. S. C., U. S. F. S.
Chapman, Charles S. (Yale For. School, '02), Maj., 10th Eng. (For.), A. E. F., forest assistant, U. S. F. S.
Charlson, Alex. (Univ. of Wash., '10); Canadian Contingent, in France.
Chatrand, Lee F. (Univ. of Wash., '16), Co. D., 4th Bn., 20th Eng. (For.), forest ranger, U. S. F. S.
Chartrand, L. J. (Mich. Ag. Col., '14).
Cheatham, J. W., Corp. (Mich. Ag. Col., '19).
Chippelard, W. A. (Univ. of Mont.), 10th Eng. (For.).
Christensen, Alfred C., forest clerk, U. S. F. S.
Christman, R. J. (Ore. Ag. Sch. For.), 2nd Lt., 16th Eng.
Chubb, S. W. (Penn. State, '12), U. S. F. S.
Chudderdon, Harold A., forest ranger, U. S. F. S.
Clancy, J. P. (Ore. Ag. Sch. For.), 20th Eng. (For.).
Clark, Charles R. (Yale, '10), recommended for commission in 20th Eng., but no further action taken.
Clark, Donald H. (Univ. of Wash., '17), 1st Lt., Bat. F, 348th Field Art., American Lake Encampment.
Clark, E. V., 1st Lt. R. O. T. C., Camp Funston, Kan., forest supervisor, U. S. F. S.
Clark, F. L. (Ore. Ag. Sch. For.), Co. D, 20th Eng. (For.).
Cless, Jr., George H. (N. Y. State Col. of For.), 1st Lt., R. O. C., 332nd Inf., Camp Sherman, Chillicothe, Ohio.
Clements, Harold, 2nd Lt. (Mich. Ag. Col., '17).
Clemmons, Walter C., 20th Eng. (For.), A. E. F., forest ranger, U. S. F. S.
Clifford, C. J., Sgt., 10th Eng. (For.), A. E. F., France, forest clerk, U. S. F. S.
Clubburn, H. C., 10th Eng. (Forest), Co. B, Expeditionary Forces, France, U. S. F. S.
Colgan, J. G., 1st Lt. (Mich. Ag. Col.).
Colledge, Edward W. (Bilt. For. School), Am. Amb. Serv., France.
Colter, Charles S., U. S. F. S.
Colville, L. F. (Mont. For. School), 10th Engineers.
Coman, E. S. (Ore. Ag. Sch. For.), Corp., 118th Eng., Co. F.
Condon, H. R. (Penn. State, '12), 2nd Lt. 10th Eng. (Forest), Pa. R. R. forester, Phila., Pa.
Cone, Theodore (Univ. of Minn.), U. S. M. C., 71st Co., 7th Eng., Santiago de Cuba, care of Postmaster, N. Y.
Conklin, J. (Univ. of Cal., '10), 20th Eng. (For.).
Conklin, W. Gardiner, 1st Lt. 20th Eng. (Forest), Co. D, 4th Bn. (Pa. State For. Acad., '08); Pa. Dept. For.
Connor, Frank W., 12th Aero Squadron, Wright Branch, Dayton, Ohio, forest guard, U. S. F. S.
Conrad, H. H. (Penn. State, '21).
Cook, Arthur M. (Yale, '08), Lt., 3rd Co., E. R. O. T. C., Camp Lee, Petersburg, Va., forest supervisor, U. S. F. S.
Cook, G. D. (Mich. Agri. College), 1st sergt. 10th Eng. (Forest).
Cook, Marcus (Univ. of Mont.), 20th Eng. (For.).
Cook, John W., clerk, U. S. F. S.
Cook, H. O., Capt., 2nd Forest Regiment, Mass.
Cook, Samuel (Mont. For. School, '18), Training Camp, American Lake, Wash., forest ranger, U. S. F. S.
Coolidge, Philip T. (Yale, '06), Signal Corps Office, 816 Consumers' Bldg., Chicago, Ill.
Cookston, Roy, Capt. 10th Eng. (Forest).
Cool, Frank J., 25th Engineers, Camp Devens, Mass. (Topographic Draftsman, U. S. F. S.).
Cool, W. C., 2nd Lt. (Cornell, '16).
Coolidge, Lieut. Joseph (Harvard, '12), 20th Eng. (Forest), consulting forester.
Cope, H. H. (Penn. State, '15), 10th Eng. (Forest).
Cope, H. Norton, forest ranger, U. S. F. S.

Copsey, C. N. (Student Univ. of Cal.), 10th Eng. (For.).
Corbitt, Willis G. (Univ. of Wash., '18), Co. C, 3rd Bn., 20th Eng. (For.), A. E. F., U. S. F. S.
Cormany, Conrad F. (Iowa State Col. ex., '19), Corp., Co. D, 41st Inf., Flat River, Mo.
Cornell, H. H. (Iowa State Col., '16), R. O. T. C., Camp Dodge, Iowa.
Corrigan, L. J., 2nd Lt. (Mich. Ag. Col., '11).
Covill, L. L. (Univ. of Mont.), 10th Eng. (For.).
Cowan, Talmadge D. (Mont. For. School), 20th Eng. (For.), forest ranger, U. S. F. S.
Cox, Windsor G., U. S. F. S.
Coykendall, William W. (Yale ex., '14), Co. B, 10th Eng. (For.), A. E. F.
Coyle, William J. (Univ. of Wash., '18), 1st Lt., Inf., American Lake Encampment.
Crane, Leo (Univ. of Minn., '16), A. E. F.
Crawford, L. B. (Mich. Ag. Col., '13).
Crichtley, Horace F. (Mt. Alto, '13), 2nd Lt., 328th Fld. Art., Camp Custer, Mich., Pa. Dept. For.
Crocker, E. S. (Mich. Ag. Col., '18).
Cronmiller, F. P. (Ore. Ag. Sch. For.), 20th Eng., Co. B.
Crookston, Byron F., 20th Engineers (Forest), Am. Univ., Wash., D. C., U. S. F. S.
Crumb, Isaac J. (Univ. of Wash., '20), Sgt., Co. E, 10th Eng. (For.), A. E. F., U. S. F. S.
Crumb, Thomas E., 10th Co., W. C. A., Ft. Flagler, Washington, U. S. F. S.
Cull, Ivan A., forest ranger, U. S. F. S.
Culley, Matthew J., forest ranger, U. S. F. S.
Culver, Ben (Ore. Ag. Sch. For.), S. M. A.
Cummings, T. S. (Univ. of Minn., '14), Av. Corps, Ft. Houston, Tex.
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- Koch, Elers (Yale, '03).
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- Koleman, N., Sgt. (Mich. Ag. Col., '19).
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- McCutcheon, T. D. (Penn. State, '20), 20th Eng. (For.).
- McDougall, Edmond H. (Univ. of Wash., '17).
- McDonald, W. A., Capt. (Mich. Ag. Col., '13).
- McDowell, Willard, U. S. F. S.
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RAINSFORD, W. K. (Yale For. School, '06).
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 Rand, E. A., 1st Sgt., 20th Eng. (Forest), (Univ. Me.), U. S. F. S.
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 Reid, Thomas P. (Yale, '11), Corp. Co. F, 6th Bn., 20th Eng. (For.) Am. Exped. Forces.
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 Rice, A. M. (Univ. of Cal., '16), 20th Engineers (Forest).
 Rice, Herbert A. (Short Course Yale, '16), has enlisted in Av. Branch of the Navy as a L. M. M. (Aviation).
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 Richards, H. E. (Penn. State, '16), 10th Eng. (For.).
 Richards, Allison M. (N. Y. State College, '17), Co. A, 5th Bn., 20th Eng. (For.), formerly with Hinckley Fibre Co., Hinckley, N. Y.
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 Ringold, Stanley L. (Univ. of Minn., '14), 10th Eng. (For.), France.
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 Roesser, Jacob, Jr., forest assistant, U. S. F. S.
 Rogers, H. J., U. S. F. S.
 Rooney, William (Univ. of Mont.), 20th Eng. (For.).
 Roon, C. L. (Mich. Ag. Col.).
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 Rowland, Arthur L. (student Mt. Alto), Co. B, 3rd Bn., 20th Eng. (For.), A. E. F., Pa. Dept. For.
 Rowland, Horace B., Jr. (Mt. Alto For. Acad., '15), Co. F, 1st Bn., 10th Eng. (For.), France, Pa. Dept. For.
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 Schulze, G. A. (Biltmore), Av. Serv., in training.
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 Sims, Lester (Univ. of Wash., '21), Cavalry.
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Walter, Roy Irving (Biltmore), Camp Jackson, S. C.

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Wise, Lloyd (Ohio State, '17).

Wisner, —, Corp. 20th Eng. (Forest), (Syra-cuse, '17).

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Woodruff, James A., Lt.-Col. commanding 10th Eng. (For.), France.

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Woodward, William M. H., 1st Lt., O. T. C., Camp Humphrey, Belvoir, Va., mineral examiner, U. S. F. S.

Woods, J. B., 1st Lt., 10th Eng. (Forest).

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Wyle, L. P. (Iowa State Col. ex, '14), Co. D, 20th Eng. (For.), A. E. F.

Wyllie, James A., Co. F, 10th Eng. (For.), A. E. F., France, U. S. F. S.

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Young, Ellsworth (Ore. Ag. For. Sch.), 10th Eng. (For.), Co. A.

Young, L. P., 2nd Lt. Inf. (Univ. of Wash., '17).

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FOREST RANGERS IN THE MOVIES.

An exhaustive study, showing the work that is being done by the forest rangers in the United States, has been announced by the Universal Film Manufacturing Company as a feature of its weekly moving-picture service. These pictures were posed under the direction of forest rangers themselves and they indicate graphically the work required of these men in protecting our State and National forests.

CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PRESIDENT, CANADIAN SOCIETY OF FOREST ENGINEERS

The writer has just returned from a trip to California, Oregon, Washington and British Columbia. In San Francisco he had the great pleasure of attending a meeting of the California Section of the Society of American Foresters, at which a very interesting discussion of light burning took place and fire protection methods were talked over. The situation seems far from satisfactory and it seems no practical steps can be taken until extended studies show just how much damage is done by light burning. It was very encouraging to see such close co-operation between the grazing interests and the Forest Service and the State Service as represented by the University.

A most enjoyable afternoon was spent in looking over Professor Mulford's new quarters at Berkeley. He is certainly to be congratulated on them and on the acquirement of some of the wonderful exhibits from the Exposition. The splendid war work being done by the University of California is beyond praise.

In Portland, Oregon, a visit was made to the office of the Western Forestry and Conservation Association, where were seen the excellent slides designed by E. T. Allen, for use in advertising fire protection in the moving picture theatres. Mr. Allen told about the new kerosene flame thrower that they use for burning brush and for clearing trails, which should be a very useful tool for fire protective work. With it trails can be burnt out without danger during wet weather much quicker than they could be cut. Also by its use the cost of brush burning could be much reduced.

In Victoria a visit was made to the Chief Forester. He is carrying on, under great difficulties, so many of the British Columbia Forest Service having gone to the front. The Dominion Forest Branch under Mr. VanDusen, in Vancouver, reports the same state of affairs. Messrs. MacMillan and Craig are engaged respectively in the production and inspection of spruce for aeroplanes. The Imperial Munitions Board is doing splendid work along these lines and the amount of spruce being gotten out is steadily increasing.

Dr. Judson Clark is devoting a great deal of time and energy to work for civic education and betterment and both he and Mr. MacMillan are members of the Rotary Club.

Messrs. Lyford, of Clark and Lyford, and J. D. Lacey and Company, are busy in their own lines and report beginning

activity in western timber properties. Mr. P. L. Lyford is taking an Eastern trip.

Dr. Howe of the University of Toronto is planning for the continuation of his investigative work, begun last summer, on the condition of cut-over pulpwood lands. He expects to put out three parties and to establish permanent sample plots. The Laurentide Company, the Riordon Pulp & Paper Company and the Quebec Forest Service will all co-operate with the Commission of Conservation in this work.

The second annual meeting of the New Brunswick Forest Club, Ltd., was held at the University of New Brunswick on April 12th, and the following officers elected: President, W. B. Snowball, President of J. B. Snowball Company, Ltd., Dean R. B. Miller of the New Brunswick Forest School, Vice-President, and Mr. L. S. Webb of the New Brunswick Forest Service, Secretary-Treasurer. The Hon. E. A. Smith, Minister of Lands and Mines, was elected life member and many new members were admitted. Some interesting papers were read and a number of important resolutions dealing with the administration and protection of New Brunswick's forest lands were prepared for transmission to the Government.

Mr. J. B. Gareau, Forester to the J. B. Snowball Company, reports that last summer they made 5 per cent estimates over 100 square miles of area at a cost of four cents per acre. Actual cutting operations on lands previously cruised showed that the estimates proved to be 94.4 per cent of the actual quantity cut on the whole of the ground to which the estimates applied. The forester has succeeded in very materially reducing logging waste.

L'Association des Ingenieurs Forestiers de Quebec continues its activities and many articles have been contributed by its members to local newspapers and journals. Two of its members, Messrs. Gagne and Gobeil, have left the Quebec Forest Service to work for the Brown Company, Ltd., at La Tuque.

Lt. H. R. Christie, formerly of the British Columbia Forest Service has been awarded the Military Cross for heroic action.

Fourteen members of the B. C. Forest Service have laid down their lives for their country.

NATIONAL FOREST TIMBER FOR SALE

SEALED bids will be received by the District Forester, 114 Sansome Street, San Francisco, Calif., up to and including June 20, 1918, for all the merchantable dead timber standing or down, and all the live timber marked or designated for cutting on an area embracing about 2,615 acres within Sections 1-2-3-4-9-10-11-12-14-15-16 and 22, T. 24 N., R. 10 E. and Sections 33-34 and 35, T. 25 N., R. 10 E., M. D. M., Taylor-Sockum Creeks Watershed, Plumas National Forest, Calif., estimated to be 44,000,000 ft. B. M. more or less of yellow pine, sugar pine, Douglas fir, red fir, white fir and incense cedar timber. No bid less than \$3.00 per M ft. for yellow pine, \$3.50 per M ft. for sugar pine, \$1.50 per M ft. for Douglas and red fir, \$.75 per M ft. for white fir, \$1.25 per M ft. for incense cedar, and \$.50 per M ft. for unmerchantable material to be taken at the option of the purchaser, will be considered. Deposit with bid \$2000.00.

The right to reject any and all bids reserved. Before bids are submitted, full information concerning the timber, conditions of sale and the submission of bids should be obtained from the

FOREST SUPERVISOR

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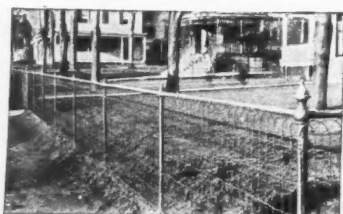
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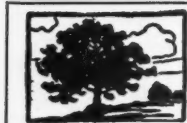
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Mr. Barnes was for years a ranchman in New Mexico. He has traveled extensively in the forest ranges. He was at one time a member of the New Mexico territorial legislature. For the past few years he has been connected with the Forest Service as Inspector of Grazing.

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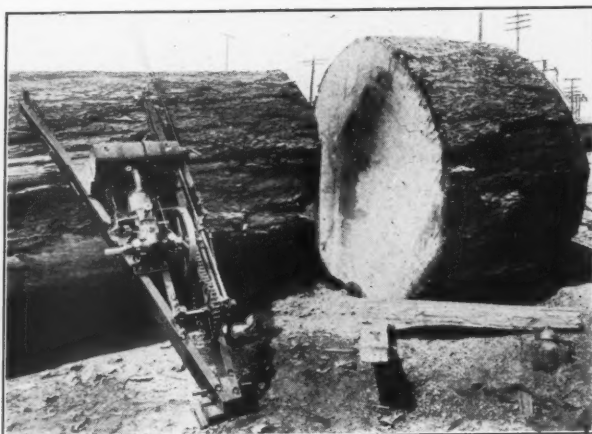
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Declaration of Principles and Policy of The American Forestry Association

IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watersheds; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people; that the census of 1913 shows our forests annually supply over one and a quarter billion dollars' worth of products; employ 735,000 people; pay \$367,000,000 in wages; cover 550,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions; that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration and management respectively; adequate appropriations for their care and management; Federal co-operation with the States, especially in forest fire protection.

State Activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State and fire protective agencies, and its encouragement and extension, individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose; and also planting by private owners, where profitable, and encouragement of natural regeneration.

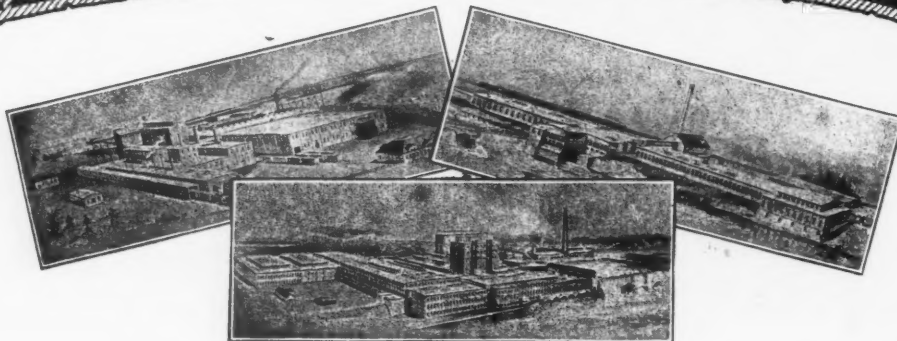
Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid the lumberman in achieving this.

Cutting of Mature Timber where and as the domestic market demands it, except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal Protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classification by experts of lands best suited for farming and those best suited for forestry; and liberal national and State appropriation for this work.



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